

# SCIENCE OF MAN

FEBRUARY 1961

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Bonampak - Samoan Ritual - Lost Cities - Folsom Dating

## COMMENTS BY THE EDITOR . . .

### Our Antiquated Antiquities Laws

With the increasing interest in artifacts as well as the increasing amount of vandalism occurring in connection with our national heritage of ruins of Early Man and of archeological artifacts, it is high time for every citizen to review the situation as it now stands. Most laws in this regard were written years ago before the sciences of archeology and paleoanthropology had progressed to the degree they have today. Furthermore these laws were written and enacted by legislators in the early days without sufficient information or knowledge of the situation.

The Federal Act of 1906, which is the law that controls excavations on public lands, reads as follows:

Provided that the examinations, excavations, and gatherings are undertaken for the benefit of reputable museums, universities, colleges, or other recognized scientific or educational institutions, with a view of increasing knowledge of such objects, and that the gathering shall be made for the permanent preservation in public museums.

California's Penal Code, Section 6221/2, which is the State's only law on the subject, reads:

Every person, not the owner thereof, who wilfully injures, disfigures, defaces, or destroys any object or thing of archaeological or historical value, whether situated on private lands or within any public park or place, is guilty of a misdemeanor.

Arizona's laws, too, are inadequate and read in part: "... shall donate to the state fifty percent of all artifacts ... to be deposited with a public museum in the state. (41-771-A.)"

Many states have laws patterned after the Federal Act of 1906 and are as incomplete. Almost every state has laws to protect its state history and prehistory, but only half have laws specifically directed at archeological (and paleontological) excavations. Most of these laws are not concerned with preserving the ruins for study, but, rather, with getting artifacts and specimens for their museums.

What should be included in adequate laws, and why should these specific things be included? In order to answer these questions one must understand just what the sciences of archeology and paleoanthropology are and why we study the ruins of Ancient Man.

Early Man did not leave us any written records of his life and times. This particular period in which he lived, before we had any written history and about which

we have no first-hand information, is called prehistory or the prehistorical period. The only way we can find out anything about prehistory is through a scientific study of the bones, the tools, and the structures of Early Man.

When the general public thinks of archeology and paleoanthropology which deals with still earlier man it often confuses these studies with that of paleontology. While the studies are entirely different, paleontologists always cooperate with other scientists, such as the archeologists, and the same laws could be made inclusive enough to protect this field of science too, as a few state laws now do. Paleontology is that science which deals with the study of fossil animal remains, the mammoth, the mastodon, the dinosaur, etc. In many instances it has actually been the paleontologist looking for fossil animals who has originally unearthed the remains of very Early Man before the paleoanthropologist arrived on the scene.

So we see that the only history left by Early Man is what we can glean from the evidence he left — bones, artifacts, and structures, in the case of archeological studies; and bones with, perhaps, a very few chipped stone artifacts in the case of the paleoanthropological period. To be able properly to study and evaluate what has been left to us, *the evidence must be studied in the place where it is found* in order to maintain its proper relationship to its surroundings. Moving an artifact a few feet up or down by a careless amateur can change the apparent period of life of the individual who dropped it thousands of years ago. It might even place the artifact with artifacts of another group that lived thousands of years earlier or later.

Thus, you see that the least carelessness can give us an entirely wrong impression of history of our ancestors. It could turn a hundred pages of our prehistory around in the wrong order. Metaphorically one might even be reading from back to front of his prehistory book instead of front to back. Furthermore, vandalism of our ruins and taking of things without keeping a proper record of the exact location can destroy whole pages of our prehistory.

Now then, what should our laws be designed to do? Should they be for the benefit of the collector who wants to build up his own collection? Should they be for the benefit of the museums so that the public may have a view of the life and times of Ancient Man? Should the laws be for the benefit of the scholar who wishes to study the past? Or should they be for the benefit of all?

Most of you will agree that the laws should be for the benefit of all classes.

They can be, if you, the general public and the legislators of our nation, understand just what the laws should include, and if you, the voter, do something about it.

First, any law concerning prehistory should provide for the keeping of any relic of Ancient Man in place (scientists say "in situ") until studied. It should prevent any form of vandalism, digging or defacing by untrained people. This portion of the law, whether state or national, should define ownership of ruins and artifacts both on public and private lands. Perhaps "archeological rights" comparable to mineral and oil rights would serve to define ownership.

Second, it must provide for excavation and study by trained people. It must define what a trained person is. Perhaps one way the law could do this is to provide for the licensing of qualified anthropologists (which includes archeologists) or grant such a prerogative only to schools, museums, and professional societies. It could also include *qualified, properly led* amateur groups.

Third, the law must require that adequate records be kept of everything dug or moved in any way. Records must not only include written information but also drawings, charts, maps, photographs, and transparencies, together with exact locations in relation to established surveyors' marks. Most important of all, records should include the archeologists' conclusions.

Fourth, the law must require the publication of all records and results within a definitely established time limit, so that they will be available to other scientists and interested lay personnel. One famous archeologist who discovered and excavated a large and important ruin has not yet, after twenty-seven years, published his entire record and results.

Fifth, the law must provide for the disposition of the ruins and the artifacts found. Who gets them? The state? The federal government? May the archeologist have any for his work? May any be sent to other states or to foreign governments or repositories for study there?

These five points are things that must be provided by law. Laws without these five points are inadequate. With these five points in mind, review your own state and federal laws on antiquities. Are they adequate? If not, it is up to you, the taxpayer, to do something about them.

It was mentioned before that many states have laws which are concerned with getting material for museums. But is the real purpose of archeology, paleontology, or any other study of the past to fill museums? No, the real purposes of these sciences is to unravel the past, not to collect material for sightseers. By this we do not mean the material should

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## OFFICIAL MAGAZINE

### NATIONAL ASSOCIATION OF LOCAL ANTHROPOLOGY CLUBS

Joseph E. Vincent  
Executive Secretary

P.O. Box 643, Mentone, California

SCIENCE OF MAN

Vol. 1, No. 2

FEBRUARY 1961

# SCIENCE OF M A N

A MAGAZINE DEVOTED TO THE STORY OF MAN, HIS WORKS, AND HIS PAST AND TO THE POPULAR PRESENTATION OF THE FASCINATING STORY OF ARCHEOLOGY, ETHNOLOGY AND THE OTHER SCIENCES OF MAN.

EDITORIAL AND ADVERTISING ADDRESS: SCIENCE OF MAN, P.O. BOX 808, MENTONE, CALIFORNIA

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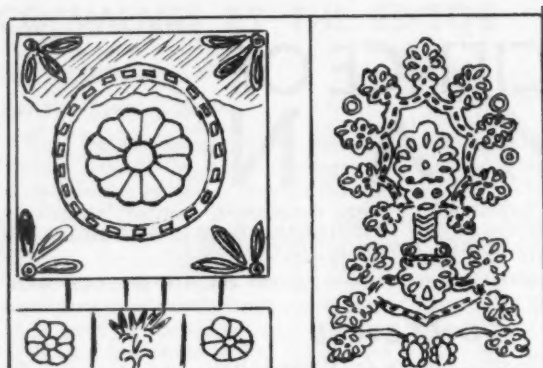
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Published bimonthly by Gemac Corporation, 1797 Capri Ave., Mentone, California.

Subscription Rates: \$4.00 per year; \$7.50 for two years, in United States and possessions.  
Foreign postage 50 cents per year extra. Single copies: 75 cents.

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Fig. 1. Art on vases, Near East.

## Art Forms – A Reflection

Drawings by the author



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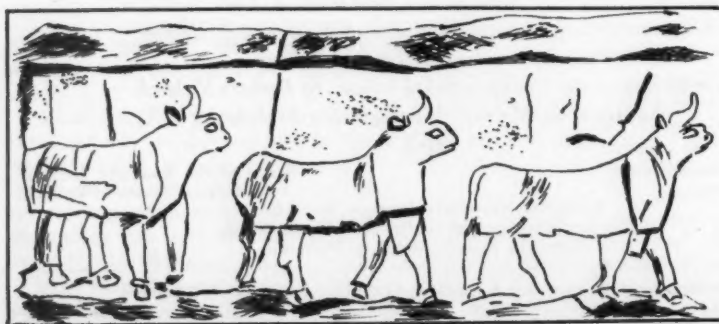
Fig. 2. Ceremonial mask, black wood, showing scarifications, Poro Society, West Africa.



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Fig. 3. Carved bird, Trobriand Island.

Fig. 4. Frieze of oxen, mother-of-pearl inlaid in wood, First Dynasty of Ur.



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Fig. 5. Lamassu, the human-headed bull, Assyrian.

# of Neolithic Culture

By Shirley J. Hill

THE STORY of civilization in the Neolithic is one of measurement of man's increasing control over nature. Art forms aid the historians, anthropologists, and philosophers in defining the degree of his advance. Utilitarian objects give an idea of the economy; decorative and symbolic designs allow interpretations about other aspects of the culture — kinship structure, social grouping, religious organization. The values of a particular society are an intricate part of the ceramics, paintings and sculptures, for art is a social expression and reflection of a culture.

With the Neolithic, man emerged from the state of nature-dependent to food-producer and pastoralist. The man-over-nature theme was portrayed in his artifacts. During the Neolithic stage man began to plant, cultivate, and improve by selection of edible grasses, roots, and trees. He succeeded in taming certain species of animals in return for fodder and protection. Some authorities hold that cultivation is older than stock-breeding; others believe both levels occurred simultaneously among different groups. One argument for the first theory points out that there have been and are today many tribes of agriculturalists with no domestic animals. Regardless of which came first, the levels may be considered as closely related.

The Pastoral Period had its start approximately six or seven thousand years ago. There are two distinct cultural adaptations based on the domestication of animals. The first is the nomadic pattern which depends entirely on breeding and grazing of animals with no production of fodder. Pure pastoral nomadism is familiar and is illustrated by the culture of many peoples of the Old World, the Bedouin of Arabia and the Mongolian tribes of Central Asia being perhaps the best examples.

Products and tools of the nomads are necessarily complementary to the type of life, that is, they are portable or collapsible. Vessels are of leather and basketry rather than of pottery; dwellings are tents rather than permanent structures of stone or clay.

Rugs are basic nomadic furnishings.

The rule of rug design and ornamentation is the use of strong colors. The bright colors stand out vividly in contrast to the dull prairie and desert hues. Jewelry and other items of personal adornment follow the tradition.

The second culture pattern within the Pastoral Period is the sedentary. This is a semi-nomadic way of life in certain areas wherein the peoples rotate their sites seasonally or annually. Styles associated with fierce aggressiveness and constant movement are replaced by those illustrative of tamedness and peacefulness. The art forms of the sedentary period reflect a further step in the evolution of man's control over nature — a redesigning in terms of zones or lines of animals. The herd is the property of the herdsman. He controls its movements, its breeding habits, and its use as food for the community. From the First Dynasty of Ur we have a frieze of a row of oxen done in mother-of-pearl inlaid in wood (Fig. 1).

Draft animals were utilized beginning in the Neolithic. Mesopotamia and related areas employed a solid wooden wheel. A tradition of nature-worship grew on this base; the wheel became the symbol of the sun. The spoked wheel came in the Bronze Age, and the sun symbol appeared, possibly through diffusion, in many areas. Examples are the Egyptian winged sun disk, the old sun disk symbol in the stained glass of Gothic cathedrals, the Christian halo, and the famous wheel of Buddhism where each part of the wheel represents one of the basic tenets of Buddhist gospel.

Feelings of gratitude toward animals developed and man began to worship animals and nature. Animals became symbols of fertility. Sacrifice of their numbers was ritually important to insure increase of plant and animal species. There were numerous paintings and sculptures depicting sacrifice of newborn animals to the gods of nature in return for protection and renewal of man's herds and crops.

A contrasting idea to the peaceful herd animal theme was that of the still untamed animal as the magical spirit of strength. The Hittite lion throne was such a source of power. Lions often

functioned as protective spirits. Another symbol of the protective power of animals was the Assyrian winged, human-headed bull (Lamassu) which was supposed to guard or ward off evil forces (Fig. 2). Some such designs carried over to later periods, i.e., the claw on the ball of Queen Anne furniture. The Venetian winged lion was the emblem of the city of Venice.

The Agricultural Pattern formed the other major Neolithic level. The beginnings were in the Near East, possibly in the Mesolithic, as evidenced by the famous Natufian sites in Palestine of about 8000 B.C.

Man was clearing the jungle and forest and working the earth. A strong sense of the even, controlled earth was felt in the design of the famous rice terraces of Bali. Art on vases, murals, etc., depicted the regular rows of plants (Fig. 3).

Cultivation of trees gave rise to new ideas of the sacredness of products of the earth. Divinity manifest in the vegetable kingdom was one of the oldest elements of Mesopotamian religion. The theme of the sacred tree with palmettes and rosettes in border designs was found throughout the Near East (Fig. 3). The tree of life idea arose — a fertility symbol — and this carried over into much later times. It was found as a component of eighteenth century Pennsylvania Dutch design.

Permanent vessels were a development of the sedentary agricultural life. Bamboo silos appeared in Egypt; jars, in some of the Cretan sites. The portable container was no longer necessary and pottery was essential to the preparation and storage of cereal foods.

Most Neolithic pottery decoration was geometric and non-objective. Agricultural traditions determined many of the

CONTINUED ON PAGE 56

## Mrs. Shirley Hill *A Biographical Sketch*

Shirley Hill was born in Honolulu, Hawaii, where as a child her interest in anthropology began. She studied at the University of California at Berkeley and received her A.B. in anthropology from the University of California at Los Angeles in 1955.

Her studies were interrupted by two children but she is continuing her work on a voluntary basis at local museums. She is also very active with the various local anthropology groups in Los Angeles and San Bernardino Counties. She hopes to find employment in her field or a related field and to continue her studies in anthropology as soon as an opportunity presents itself.

# BONAMPAK: A MAYAN MYSTERY

Text and Photos by Otto Done

A TRIP to Bonampak to see the ruins and to visit the strange and almost extinct Lacandon Indians is like stepping 2,000 years back into time. We sensed the abrupt change as we dropped onto the tiny airstrip at El Cedro, in the rain forest of Chiapas, southern Mexico, near the Guatemalan border. The small plane was like an insect by comparison with the vast jungle (Fig. 1).

Our destination, Bonampak, (see map, page 53) named by the late Dr. Sylvanus Morley, means "painted walls" in the Mayan language. It was discovered by Charles "Carlos" Frey, a native of Chicago. Seeking an escape from civilization, Carlos left his home and found this remote area after listening to lectures in Mexico City. He lived with the Mayan people and married one of their fair daughters. There he learned of the

ruins of ancient temples hidden deep in the jungle. After much persuasion, assisted by the gift of a hand-cranked phonograph, José Pepe, his brother-in-law, revealed the location of the sacred site. On a second trip to Bonampak Carlos was joined by John Bourne and Giles Greville Healey, a photographer, at which time it is understood that the now famous murals were found.

I was stirred by the report of this discovery and later had the unexpected pleasure of visiting with Carlos during his occasional trips to Mexico City. Then, the opportunity came to make the trip with Dr. Milton R. Hunter, a writer, and our mutual friend, José Dávila. A dream of long standing was about to be realized. We climbed from the small plane at El Cedro, a former chicle depot, but to our surprise the

Lacandón camp had been deserted for several months. Paco, our pilot, advised us not to go into the jungle without a guide. He said others had been hopelessly lost. Our determination out-voted our better judgment and we decided to continue. Paco returned to Tenosique, Tabasco, a small town on the outskirts of civilization about two hundred miles north. We were to meet him at the airstrip three days hence.

We started on the indistinct trail to Bonampak, some fifteen miles away, but after an hour of slowly making our way with machetes and heavy packs, the trail gradually disappeared. Could we find our way back to the airstrip? We realized we were lost. But not for long. Soon we heard voices ahead and three *Lacandon*es appeared. [The *Lacandon*es are one of the "tribes" or groups of Maya now living in the deep jungle areas of Chiapas, Mexico. Ed.] They cautiously approached us in the dense green jungle. Speaking the ancient Mayan language among themselves, they apparently decided we were friends and motioned us to follow them (Figs. 2, 3).

About two hours farther on we came to their *caribal* or camp. There we found a small clearing near a stream, four or five huts, a family group of twelve, a few banana trees, corn, sugarcane and sweet potatoes. Earlier explorers had brought them a few pigs, dogs and cats. They had several tame parrots which

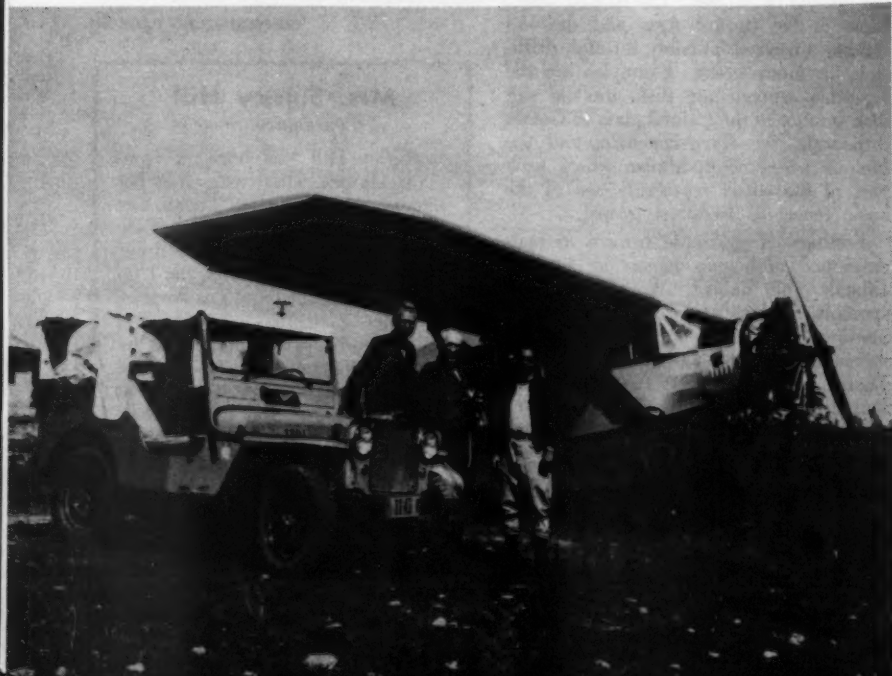


Fig. 1. A jeep, a small plane, and walking were the means of transportation used to penetrate the rain forests of southern Mexico. Making the trip were, left to right, Otto Done, professional photographer and tour leader; Dr. Milton R. Hunter, writer from Salt Lake City, Utah; and Jose Davila, guide and business man from Puebla, Pue.

Fig. 2. While lost on the indistinct trail to Bonampak, these three Lacandones appeared out of the dense jungle and offered to lead us to their *caribal*.

they used as decoys for attracting others they caught for food. Hunting parrots was a job for the two young boys with their bows and arrows.

The Lacandones are of pure Maya descent. We found them to be a peaceful and proud people with a sense of humor, hospitality, and honor seldom found in this modern world. Our expensive cameras and other equipment were completely safe with "civilization" more than two hundred miles away. The loosely fitting robe they wear is cool, convenient for wading through streams and swamps, and practical when they sit down, for covering their bodies against the malaria-carrying mosquito, perhaps their most dangerous enemy (Fig. 2). Although most of the women were pregnant, we saw few babies. Infant mortality is undoubtedly high. The common cold and other ailments brought to them from the civilized world take many lives and with only about seventy-five left their group is rapidly facing extinction. Add to this the rigors and privations of jungle life, malnutrition and the incessant jungle rains six months each year, and you have some idea of their problems.

By offering gifts of pocket knives, combs, machetes, soap, etc., we arranged for Bor and his son, Juan, to lead us to the temples of Bonampak. Money meant nothing to them as they had no place to spend it. By one o'clock we were back on the trail with our guides setting a fast pace. Fresh from a world of offices, automobiles and pavements, it was a stern physical test in the humid jungle heat (Fig. 3). By mid-afternoon we had reached José Pepe's *caribal* where we stopped a few minutes to make pictures. Only a few months before Carlos Frey had been drowned in the river nearby as he was assisting a fellow explorer while leading an expedition to Bonampak. We saw his widow but she refused to be photographed because she needed a new dress.

We crossed the Lacanja River in José

Fig. 3. At first we were careful to keep our feet dry but soon we were wading knee deep. The true mood and description of the jungle may only be appreciated through a personal experience. At times it was wet, at times dry, sometimes noisy, sometimes quiet, but always fascinating.



Pepe's dugout canoe and continued our journey through the dark jungle (Fig. 4). After an hour's walk our guides suddenly stopped and said they were going back but that the man in the next camp would take us on to Bonampak. After a little discussion in the Spanish language we learned that Kin (Sun) Obregon in the next *caribal* had recently killed *Kayom* (god that sings) Carranza over a feud. The only explanation we could get was that Kin was "loco" in the head. Our guides reluctantly consented to continue the trip after we told them "no gifts until we return." With law enforcement more than two hundred

miles away, we approached Kin's village with apprehension. Our guides dropped far to the rear. Fortunately, Kin was in a good mood, he gave us a gift and asked what we in return had for him. As self-appointed guardian for Bonampak he almost insisted on taking us there, suggesting that we first spend the night at his camp. We refused as we didn't relish the idea of spending a night and a day with a killer. We bid him *hasta luego* but were soon forced to stop and make camp because of mosquitoes and early darkness. We hung our jungle hammocks in a triangle and built a fire in the center to dry our





Fig. 4. From Jose Pepe's *caribal* we crossed the Lacanja River in his dugout canoe. Nearby Carlos Frey lost his life years before while trying to save a companion on an expedition to Bonampak.

clothes and to keep away prowling animals, especially the jaguar. Bor and Juan curled up on spots where they had built fires to warm the ground. Never before had we realized the jungle nights could be so cold.

As we closed our eyes that cold night, we imagined with each unfamiliar noise that Kin was sneaking into our camp to revenge the brush-off we gave him.

At daybreak, we ate a quick breakfast and were soon on the way to the ruins. Chattering monkeys and squawking parrots seemed to resent our presence as we hurried toward our destination. Noises on the trailside sounded like snakes but we never saw them. Our first glimpse of Bonampak came about 10 o'clock with

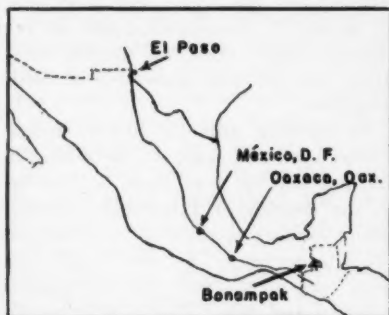
the sight of a huge broken stela covered with Mayan hieroglyphs. Continuing up a hill we came to the temple with its priceless treasure, the most famous of all Mayan murals found to date (Fig. 5, 6)

The Egyptian-style life-size murals, made with wet mortar, reveal much concerning the Mayan way of life. The vivid colors orange, green, turquoise, red and their hues have endured more than a thousand years. After a few hours of shooting pictures, making notes and taking measurements, we headed back to Bor's *caribal*, quietly bypassing the killer's hideaway.

That evening we experienced real jungle hospitality. Our food supply was

gone as we had shared it with our guides. The girls brought us sugarcane, the boys cut a stock of bananas for us. We were served wild turkey eggs — sent back to be boiled — turkey meat, sweet potatoes, and delicious tortillas. We made good use of our running water, a nearby creek, and we slept soundly in our jungle hammocks under one of Bor's open shelters.

The next day the whole camp, except Grandma, accompanied us on a three-hour walk back to El Cedro airstrip. One of the boys killed a wild turkey and hung it in the fork of a tree to be picked up on the return trip. We waited at the airstrip until early afternoon and when Paco finally arrived in his plane, four hours late, he casually said he was sure we were lost and figured his return trip would be in vain. We gave more gifts to our newly made friends and reluctantly headed back to civilization.



Bonampak not only stands as a monument to the high degree of culture attained by the early Mayans, but it is a sad reminder of the decline and fall of that civilization. It is definitely off the beaten track but worth the hard journey for the adventurous or the serious-minded student of Mesoamerican civilizations.

#### *Additional Note On Lacandon Maya*

The following additional sidelights on the Lacandonones were furnished in part by Dr. Carl B. Compton.

The Lacandonones are one of the small offshoot groups of the Maya people.



Fig. 6. Bor, our guide, poses in front of one of the walls covered with colorful murals.



Fig. 5. Mural in Bonampak Temple No. 1 shows Maya musicians, priests, dancers, warriors, and other figures in fierce masks.

Since the coming of White Man, they have confined themselves largely to the thick jungles of Chiapas. Because of the severe conditions there, they necessarily live in small groups. The group to which Mr. Done refers once consisted of perhaps thirty or forty members, but is now reduced to 17 or 18. This particular group used to inhabit the jungles between Bonampak and San Cristobal Las Casas.

The Lacandones were probably first brought to the attention of the general public in the United States by Dana Lamb in the highly fictionalized accounts of his experiences in *Enchanted Vaga-*

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Pictures made with the Polaroid 60-second camera were pure magic to the Lacandones. They easily identified their companions but needed help to pick out their own likenesses. The use of the Polaroid made them cooperative in making movies and stills.





# The Samoan Kava Ceremony

## Its Form and Function

By Lowell D. Holmes  
University of Wichita

The village *taupou* (ceremonial virgin) serves the kava. Notice the wooden legs for the kava bowl and the manner of dress of the server.

does not have as much effect on the limbs as sitting cross-legged for hours while the kava ceremony is carried to its conclusion. While Beaglehole<sup>1</sup> reports rare cases of kava addiction in Pangai, Tonga, such a phenomenon was never observed in Samoa. It has also been claimed, sometimes by native informants, that skin diseases and eye ailments may result from over-indulgence, but personal observation did not corroborate this claim either.

Kava is often drunk by Europeans who upon acquiring the taste, find it very refreshing. Many ports in the South Seas boast kava saloons where local businessmen take a kava break during the mid-morning hours.

The relative importance of kava varies from island group to island group. Kava drinking is primarily a Western Polynesian phenomenon, and its most intensive use is found in Tonga, Fiji, and Samoa. Beaglehole reports universal use of the beverage in Tonga, but maintains that accompanying ritual is almost totally absent in villages inhabited by commoners<sup>2</sup>. Hawaii and Tahiti were familiar with the drink, but its use was not very conspicuous. Many Bishop Museum publications on Cook Island cultures do not even mention kava. The Maori did not drink kava although a variety of the plant which could have been used for such purposes was indigenous to New Zealand. Aitken<sup>3</sup> reports that in the Australs the occasional and somewhat unimportant practice of kava drinking was abolished by missionaries in 1822. New Caledonian Polynesians, on the other hand, are reported as ignoring the plant altogether<sup>4</sup>.

In Samoa it appears that kava drinking and its attendant ceremonies has a long history, the practice being intimately related to indigenous religious practices and social organization. Mythology relates how kava drinking was given to mortals by the first high chief, *Tagaloa Ui*, and prescribes the form for modern kava ceremonies. The myth which provides these sanctions was recorded in *Manu'a* as follows:

Not far from the village of Fitiuta there is a place where the rising sun is first seen in Samoa. This place is called *Saua*. Long ago there was a custom that one day a year one of the families of Fitiuta must sacrifice a daughter to the sun. On the day of the celebration of the sun a

IN THE ISLAND of the *Manu* of American Samoa no formal or informal meeting of titled men would be complete without the distribution of the traditional Polynesian beverage *kava*. This drink, known locally as *'ava*, is prepared by steeping the pulverized roots of the plant *Piper methysticum* in a prescribed amount of water until a cloudy, khaki-colored liquid

is produced.

Kava is not an intoxicant, although much has been made of its narcotic properties. Early missionaries maintained that the concoction partially paralyzed the lower extremities, making it difficult to walk. More recent observers, including the author, found it to be a stimulating, astringent, muscle-easing drink which

N.B. Endnotes will be found on page 57.

daughter from the family of Mata'inaumati went to Saua to be sacrificed. The girl's name was Ui. When the sun came for the girl he saw that she was very beautiful and instead of eating her decided to take her as his wife. He took the girl to live with him in the sky. After a time she became pregnant and wanted to go home so that her first child could be born in her family's village, and she wanted to show her parents that she had not been killed.

While journeying home Ui had a miscarriage, and the fetus floated away upon the waters where it was found by the hermit crab, the plover and the shrike. By manipulating the fetus and breathing life into it the animals created the first Samoan chief, Tagaloa Ui.

After his creation Tagaloa Ui made a kilt for himself out of *ti* leaves and started to walk toward the village of Fitiuta. On his way he walked through a grove of kava plants and discovered the house of the mortal, Pava. Pava invited the chief to enter his house and there the first kava ceremony involving mortal men was held.

When Tagaloa Ui entered the house he took a place in the end of the house (today the seat of honor), and Pava sat in the front of the house (the traditional place for talking chiefs) and began to prepare the kava. Pava chewed and spit the kava into a taro leaf (*Laupula'a*) which served as the kava bowl. Cups consisted of *tautava* leaves, and Pava used his fingers to wring the kava, as no strainer was then known.

While Pava was wringing the kava, his son, Fa'alafi, laughed and played near the bowl. Tagaloa Ui instructed Pava to make the boy sit down and be quiet, but nothing was done about the irreverent boy. After several unheeded warnings, Tagaloa Ui picked up a coconut frond, formed it into a knife and cut Pava's son into two pieces. Then Tagaloa Ui said to Pava, "This is the food for the kava. This is your part and this is mine." Pava mourned and could not drink the kava.

Then Tagaloa Ui said, "Let us have a new kava ceremony. The kava and the leaf bowl and cups were thrown away and Tagaloa Ui told two of Pava's sons to go to the highest mountain, the home of Tagaloa Lagi, and bring down a wooden kava bowl, coconut cups, a hibiscus strainer and a new kind of kava, *latasi*, a single branch kava tree. These things were brought, and a second kava ceremony was started. Again Pava served as the kava

wringer, and when the kava was ready Tagaloa Ui said, "Bring me my cup first." Tagaloa Ui did not drink the kava but poured it onto his piece of the dead son of Pava and then onto Pava's piece. Then he said, "*Soifua*" (life). The two parts came together and the boy lived. Pava was so happy he clapped his hands. Pava drank his cup of kava and Tagaloa Ui gave the following orders: "Pava, do not let children stand and talk while kava is being prepared for high chiefs, for the things belonging to the high chiefs are sacred."

A number of ritual details of the modern Samoan kava ceremony seem to relate directly to this myth. They are:

1. The seating arrangement of chiefs and talking chiefs.
2. Prohibitions against children, or indeed any unauthorized untitled persons, attending the ceremony.
3. The solemn atmosphere which must prevail.
4. The proper equipment for the production and distribution of kava—a carved wooden kava bowl, a hibiscus strainer, a coconut cup, and a certain type of kava.
5. The order of drinking—high chiefs first, talking chiefs second.
6. The pouring of a bit of kava from the cup onto the mat.
7. The concept of food for the kava.
8. The use of the term "*Soifua*."
9. The clapping of hands when the kava is ready.
10. The duty of talking chiefs to direct the kava ceremony.

The importance of the above is indicated by the fact that although shortcuts are often taken in the modern kava ceremony the features listed are seldom if ever altered.

Kava in contemporary Samoan society has been likened by Keesing<sup>5</sup> to the European cocktail or highball in that it produces a relaxed and friendly atmosphere conducive to social cooperation. The kava ceremony is invariably the initial act of any meeting of the village council (*fono*), and is therefore a definite part of formal discussion and decision making. More universally, it is an essential part of all ceremonies associated with births, marriages, deaths and title installations. No bonito boat or house is ever constructed without the labor being prefaced by a kava ceremony wherein the carpenter is served first kava in the name of *Sao* (a name given to carpenters by Tagaloa). The ceremony is said to insure successful work.

Kava drinking is without doubt the most important element of the *aiava*, the ceremony of greeting for visiting parties (*malaga*), and therefore carries much of the burden of Samoan hospitality.

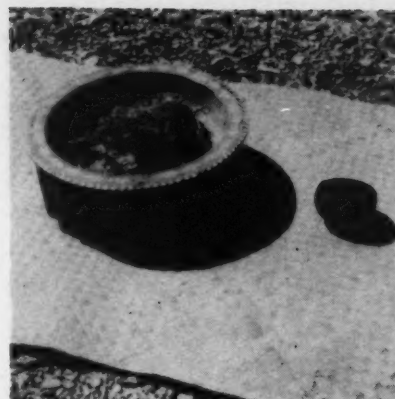


Fig. 1. Kava bowl, a fiber strainer, and a kava drinking cup.

Aside from its ceremonial use kava is reported to have certain medical uses. It is often used to counteract chills which frequently accompany filariasis. Some believe that kava chewed in large quantities will cause abortion. Kava is also claimed to be a cure for gonorrhea, and it is a matter of record that German drug houses at one time imported small quantities of the plant for this purpose.

While the kava ceremony is considered the exclusive property of titled men there are certain ceremonial occasions, such as the entertainment of a visiting party (*malaga*), when the society of untitled men (*aumaga*) or the wives of the village chiefs (Woman's Committee) will partake in their own sacred ritual. On such oc-

Fig. 2. An orator chief (talking chief) complete with speaker's staff and fly switch — the mark of chieftainship.

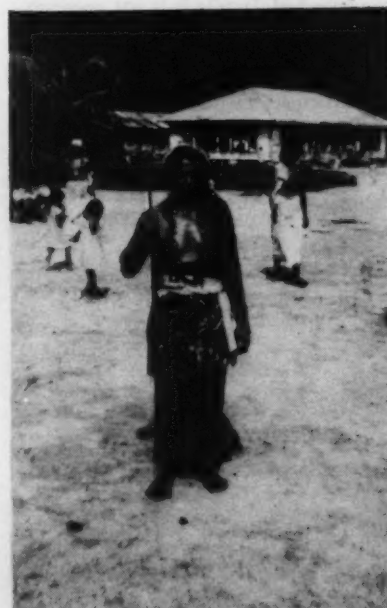




Fig. 3. Member of the aumaga prepares the kava by pounding it in a crude mortar.

casions the order of drinking is determined by one's relationship to the title holders of the village. Having a father or husband who is the village paramount chief entitles one to be honored with first kava.

Some regional variation in kava ritual may be observed, and even in a given village the ceremony is not always performed exactly in the same way. Certain parts may be abbreviated or eliminated altogether, and perhaps the ceremony to be described in this paper is closer to the ideal than to the real. However, all the steps described herein have been observed frequently on occasions of high ceremony. Regional variations include differences in who may wring kava, the number of attendants involved in serving the kava, and in some cases, the status and sex of those served. In some villages only men are permitted to wring kava, but in others the ceremonial village maiden (*taupou*) may do the honors. On the island of Tutuila it is not uncommon for women to hold *matai* [valid] titles and serve on the village council. They are, therefore, as titled individuals, qualified to participate in the kava ceremony. In Manu'a women neither hold *matai* titles

nor partake in the drinking of kava at formal ceremonies where chiefs are present.

Margaret Mead reports<sup>6</sup> a unique ceremonial variation in the Manu'an village of Fitiuta. Here a ceremony known as *Alofi Sa* involves a prolonged pre-ceremony hush during which no one is allowed to stir or speak. Although the author has observed many kava ceremonies in Fitiuta, even a formal one for the Crown Prince Tungi of Tonga, these unique features were never observed. It is possible that the *Alofi Sa* is no longer performed. Another variant, now extinct, was the king's kava ceremony in which the *Tuimanu'a* participated. This very formal ceremony involved eleven kava bowls and many attendants, including the king's *taupou* who was the official wringer.

#### The Modern Kava Ceremony

In preparing for the modern Manu'an kava ceremony the talking chief (Fig. 2) who will later direct and announce the kava distribution selects a piece of kava root. This part of the kava plant is called the Brother Roots (*'ava uso*). The name derives from a myth which recounts how two brothers, the sons of Tagaloa, found a piece of floating wood while swimming west from the Manu'a Group. They divided the wood and used the two pieces as floats. One of the brothers returned to Fitiuta where many similar plants were observed to be already growing, while the other brother swam on to western Samoa where kava was unknown. Here he planted his piece of wood and thereby introduced kava drinking in this area.

After the initial selection of a piece of kava root, the society of untitled men (*aumaga*) takes over and the root is cut into still smaller pieces. (Fig. 3.) In this form kava is known as *una o le i'a sa*, scales of the sacred or forbidden fish. This term alludes to the fact that like many other sacred or taboo foods, kava is reserved for the exclusive use of the chiefs.

While the pieces of kava were formerly chewed, final processing today involves pulverizing in a crude stone mortar (*ma'a tu'i 'ava*). Other preparations for the ceremony include washing the kava bowl and bringing water in coconut shell containers (sometimes a galvanized bucket is substituted today).

A full inventory of ceremonial paraphernalia includes a carved bowl eighteen

inches in diameter, which traditionally had four legs but now may have as many as twenty-four, a strainer made of shredded hibiscus bast [tough inner bark] and a polished coconut cup. (Fig. 1.)

Village kava ceremonies are usually held in the house which serves as the meeting place of the village council (Fig. 4). As the chiefs enter the council house an attitude of reverence prevails. Nothing may be worn above the waist, and body ornaments of any type must be laid aside. The men speak in whispers and refrain from smoking as the kava ceremony begins.

At a point near the back of the house three untitled men, members of the village *aumaga*, station themselves at the kava bowl while a fourth remains outside to clean the hibiscus strainer of kava fibers when it is periodically thrown to him by the wringer. The man who is to wring the kava (Fig. 5) sits immediately behind the bowl with a water pourer to his right, and to his left, the man who will carry the cups of liquid to the assembled chiefs. Several taboos must be observed by the wringer. These include never wearing a flower necklace, a ring, a shirt or any other clothing except a wrap-around (*lavalava*). *Lavalavas* of all untitled men involved in the ceremony must be worn so they do not extend below the knees. The wringing of the kava must be done correctly and with precision. Untitled men take pride in their ability in this art. There are a number of specific steps in the preparation of the liquid, and each has a traditional name. They are:

1. *Fa'apulou*—Covering the kava in the bottom of the bowl with the strainer.
2. *Vau*—Pushing down on the strainer with the heels of the hands and with the fingers.
3. *Aōga*—Collecting pieces of kava fiber in the strainer by drawing it toward the back of the bowl.
4. *Tatau*—Wringing the kava. The strainer is lifted from the bowl and wrung three times only. It is grasped in both hands like one would grip a baseball bat. At the end of each wringing stroke the clenched hands are bent forward so the liquid will not run down the arms.
5. *Mapā*—Cleaning the strainer. After the above steps have been carried out three times the strainer is passed under the right knee of the wringer and thrown back, with a side arm motion, to the untitled man outside the house who catches it in his right hand and removes the kava particles in it by snapping it three or four times. The hibiscus strainer is then thrown back underhand and caught by the wringer in his right hand.

The above process is continued until



Fig. 5. Young man wringing kava.

the bowl is free of pieces of kava root. When this has been accomplished and the kava is ready for drinking the wringer wipes the rim of the bowl, cleans the strainer himself by snapping, forms it into a ball, plunges it into the kava, and lifts it above the bowl with both hands, allowing a stream of liquid to fall into the bowl. This final gesture, known as *sila alofi*, permits the chiefs to see whether the kava requires more water. It is said that the correct mixture is judged by the sound of the kava splashing into the bowl as well as by its color.

If the talking chief serving as kava announcer does not call for more water the hibiscus strainer is wrung out and placed on the rim of the bowl. The kava wringer then places his hands on the sides of the bowl, his right covering the strainer, and remains in that position until the kava has been distributed.

It is the responsibility of the talking chief directing the ceremony to watch the progress of the wringing from his position behind and to the right of the bowl, for when the kava is nearly clear of fiber particles he must commence the oral part of the ceremony with a poetic recitation (*solo*) which recounts the mythical origin of the kava or particular kava ceremonies of importance held by the ancient Samoan gods. A typical *solo* is as follows:

Si'i le faiva e to'alua  
 Papā ma Lotulotua  
 Aumai se i'a setasi  
 Telemu ma Telea'i  
 O mai lua te taufetuli ile lagi  
 Fati mai se la tasi  
 Se la o le la ava o tu felata'i  
 Gaugau ma sasa  
 Gaugau ma falava

#### Translation

Two people went fishing,  
 Papa and Lotulotua (members of the  
 Tagaloa family)  
 They brought one fish,  
 The Manini, from the sea.  
 Telemu and Telea'i (two brothers of  
 the Tagaloa family)  
 Were sent to run to the heaven  
 To bring a branch of kava.  
 They broke and hit the kava.  
 They broke and hit the fierce kava.

The above is but one of many traditional *solos* that may be used, but clever talking chiefs may and do compose their own. It will be noted that the example given above is composed of rhyming couplets. There is, however, little concern for rhythm. The *solo* is timed to be finished the moment the kava is completely clear of fibers, whereupon the kava announcer states, "*Ua usi le alofi*" (The kava is already cleaned). The color and consistency of the mixture is then analyzed and if pronounced acceptable the assembled chiefs respond by clapping

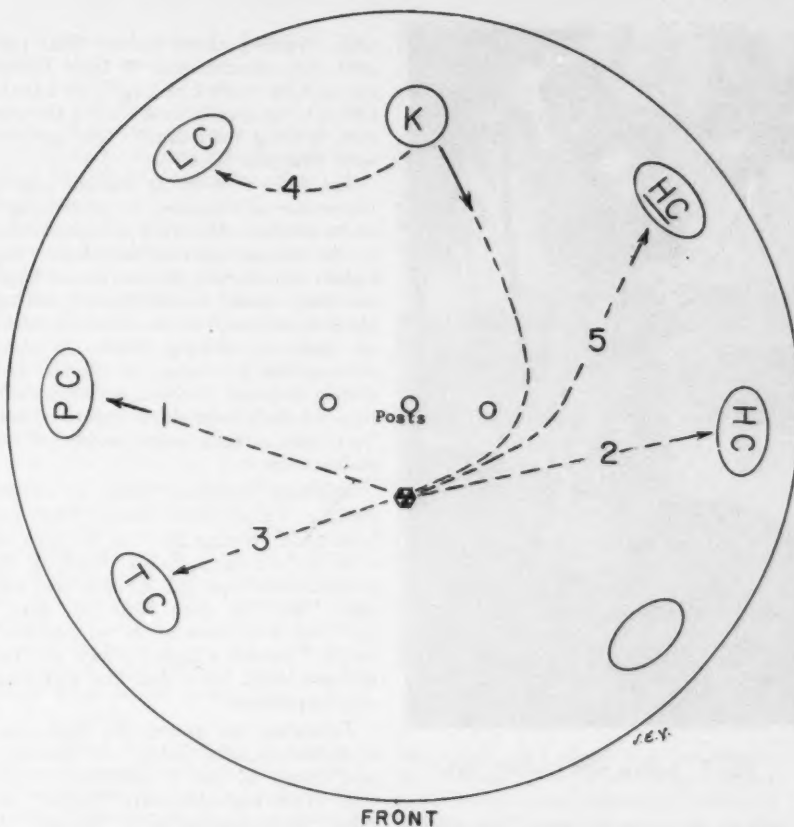


Fig. 6. Explanation of above diagram:

- 1 — Serving route to paramount high chief (PC)
- 2 — Serving route to high chief (HC)
- 3 — Serving route to talking chiefs (TC)
- 4 — Serving route to lesser chiefs or talking chiefs (LC)
- 5 — Position of high chief who will receive last kava (HC)
- ★ — Point at which the kava server stops before approaching chiefs of high rank
- K — Kava bowl

Fig. 4. Village council house, the scene of the kava ceremony.



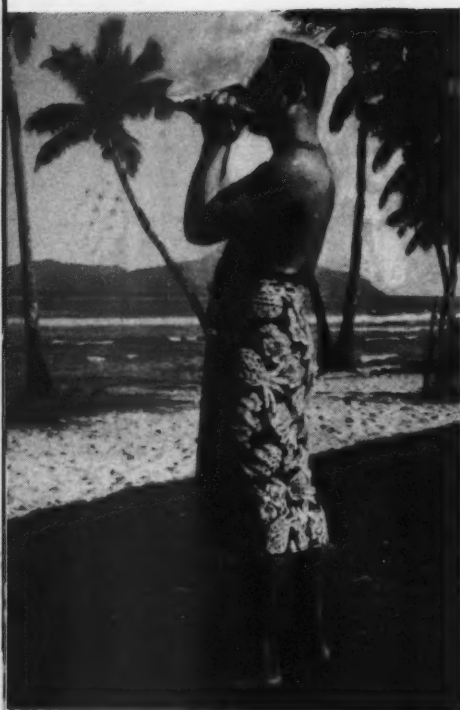


Fig. 7. Calling with a conch shell.

their hands four or five times. Informants state that this act of clapping corresponds to the clapping of Pava when his son was returned to life through the action of Tagaloa Ui at the first kava ceremony.

The distribution of kava begins by calling the cup title of the high chief who, because of his rank, is permitted to drink first. (Fig. 6.) It must be understood that the cup title is not the family title of the chief. For example, in Ta'u village, High Chief Lefiti (Lefiti is the family title) has the cup title *Lupe lele talitali lau ipu* (The pigeon who flies, receive your cup). Only high chiefs have cup

Fig. 8. Another council house.



titles. Talking chiefs receive their cup after the announcement of their family title and the words *Lau 'ava* (your kava). Chiefs of secondary rank receive the cup after hearing their family title and the word *Taumafa* (drink).

The order of drinking is of the utmost importance as it signifies the relative rank of the drinker. The chief of highest rank in the village receives first kava; the highest talking chief, second; second highest chief, third; second highest talking chief, fourth; and so on down the ranks of chiefs and talking chiefs. In some villages this procedure is altered, and certain divisions of chiefs, or certain sections of the village drink before others. To drink last kava is as "prestigious" as to drink first.

Drinking etiquette, which varies according to rank, is as follows: When the high chief receives the cup he does so with both hands. Before drinking he pours a few drops onto the floor mat and says, "May the gods bless this kava," or "May God bless us as we partake." Smith<sup>7</sup> records a typical prayer as, "Let the god drink kava that this gathering may be pleasant."

Following this prayer, the high chief raises his cup, says "*Soifua*" or "*Manuia*," and drinks all that is contained in the cup. If the high chief says "*Soifua*," the other chiefs respond with "*Manuia*." If the latter word is pronounced the chiefs reply with "*Soifua*." Informants point out the connection between this aspect of the modern kava ceremony and the action of Tagaloa Ui in the first kava ceremony. The pouring of kava onto the mat represents the pouring of the liquid onto the two parts of the dead boy, and the word "*Soifua*," which may be translated "Life" or "May you live," alludes to the command given by Tagaloa Ui when he performed the miracle of returning Pava's son to life. The word "*Manuia*" may be translated "Blessings" or "May the gods bless you," and perhaps may relate to an expression of gratitude by Pava. It is also contended by informants that the right of the high chief to drink first kava and to sit in the end of the house is established in the Tagaloa Ui myth.

The drinking etiquette to be observed by a high talking chief varies somewhat in that he receives the kava cup with two hands if high chiefs are occupying both ends of the house, but if only one high chief is seated to the high talking chief's right, the cup must be received with the left hand to avoid showing the high chief the back of the hand. Of course the cup will be taken with the right hand if the high chief is seated to the talking chief's left. A high talking chief usually does not pour any kava onto the floor mat although he may say "*Soifua*" or "*Manuia*" before drinking.

Chiefs and talking chiefs of secondary rank do not pour kava onto the mat, nor do they say anything before drinking. Furthermore, they are not expected to respect the position of the high chief by receiving the cup with any particular hand.

Some individuals do not care for kava, and they "drink" symbolically by touching the bottom of the cup as it is passed to them. When many chiefs are assembled there is often not enough kava to serve everyone. In such cases it is important for the kava announcer to judge when but a single cup of kava remains and then to announce rapidly the names of those who are entitled to drink. Following this list of titles the announcer calls the cup title of the high chief who is to be honored by drinking last kava, and the final cup is served to him. When talking chiefs of secondary rank are aware that there is not sufficient kava to go around they will often interrupt the announcer and call, "I will drink with my chief." When this occurs the lesser talking chief's title is not announced but the cup is taken to him immediately after the high chief of his family has been served.

Unconsumed kava must always be cast away and the cup returned empty. It may be handed or thrown back to the server. If the cup is thrown to the server it is done to test his alertness.

All *aumaga* members who expect to take part in the kava ceremonies must master the etiquette of serving kava. Each rank of chief or talking chief must be served in a special and distinct manner. Respect is paid to the half of the house in which the paramount chief is seated, and the kava server must walk in this area as little as possible in making his rounds to the drinkers. (Fig. 6.)

When serving a high chief the kava distributor dips the coconut cup into the kava and carries it with the thumbs and index fingers at the level of his waist to the center of the house where he stops, raises it to his forehead and walks in the direction of the high chief. About four feet from the chief, the server lowers his right hand and, with his left, places the cup on his upturned right palm. The left hand is placed behind the back, and the cup is handed to the high chief chest high. The young man then walks to the center of the house where he stands at attention until the chief has finished drinking.

Lower ranking chiefs are served kava with the right hand, but in the case of these lesser personages the cup is held by the edge with the thumb inside thus showing the palm of the hand to the chiefs as it is presented to them.

In serving a high talking chief the cup is held by the edge with the thumb, index and middle finger of the right

hand. As it is carried from the bowl it is held just above the left shoulder. When in front of the high talking chief the kava server swings the cup forward and down, presenting it with the back of his hand toward the talking chief. The kava cup of lower ranking talking chiefs is carried in the right hand, waist high, but is presented with the left. As in the case of high talking chiefs the cup is held by the edge and the back of the hand is shown to the drinker.

After having delivered the kava the server returns to the center post of the house and stands facing front while the kava is consumed. In rare cases he may return to a position in front of the kava bowl and face the front of the house.

When all of the assembled chiefs and talking chiefs have drunk or have been acknowledged as having the right to drink, the kava announcer concludes the ceremony with "*Ua moto le alofi*" (The kava is finished). "*Ale le-fau ma le ipu e tautau*" (The bowl will hang with the *fau* [strainer] and the cup). Perhaps a more traditional closing is that recorded by Smith<sup>9</sup> as "*Le 'ava 'ua motu*" (The kava is broken off). "*Ua matefa le fau*" (The strainer is poor). "*Ua pa'u le alofi*" (The company of chiefs has fallen down).

The assembled chiefs respond to these final words of the kava announcer with an expression of thanks, "*malo fa'asoa*." At the conclusion of the kava drinking ceremony there is always the *fono o le 'ava* (food for the kava ceremony). According to the Tagaloa Ui myth the food for the first ceremony was the son of Pava and the food for the second was the sacred fish Manini and *talofa'afana* (recooked taro). Today the *Manini* and *talofa'afana* remain the traditional foods for the kava ceremony but there are frequent substitutions of rice, tinned beef, or other prestige foods.

The present day kava ceremony contains a number of elements which can be traced to older religious concepts of Samoan culture. The pouring of a bit of kava onto the mat not only relates to ancient mythology, but a number of scholars feel that it is a ritual reenactment of an ancient religious custom of pouring an evening offering to family or village gods. Steubel records in *Samoanische texte* (1895) that the typical prayer accompanying this act was "O the kava to drink of thy highness Sepo. Be lovingly disposed. Bless this village." (Sepo was primarily a war god, but in many villages served as a household god.)

Mead<sup>9</sup> suggests that the casting away of unconsumed kava may be related to ancient ceremonies wherein kava was entreated to depart and take all misfortune with it. On the other hand it may be related to precautions about unconsumed food or drink which might be used

for purposes of sorcery. Certainly the sanctity of the mixing bowl and gear, the air of solemnity and respect which accompany the entire ceremony and the inclusion of poetic recitations which always allude to ancient Samoan gods testify to the religious nature of the ancient ceremony.

Although the kava ceremony contains these unmistakable references to pre-Christian religion there seems to have been no great problem in fitting it into the Christian context. Bits of Christian prayer frequently accompany the pouring of kava onto the mat prior to drinking, and it is not uncommon to see local pastors included in the kava circle. On such occasions the village pastor (*jai'fau*) drinks first kava, thus being accorded honors even greater than those shown to the village paramount chief. Since village pastors do not hold titles their privileged position of drinking indicates their exalted status within the social structure of the village. The relative prestige of Samoan medical practitioners and village school teachers may be ascertained equally well from the fact that they are served kava second only to the highest of village chiefs.

Neither the American government nor the church has attempted to do away with the kava ceremony, and it is not unusual to see chiefs partake in a communion service in church and then go home and conduct a kava ceremony while waiting for the midday meal.

It has often been said that while other Polynesian people worshipped gods, Samoans worshipped their village and social organization. The religious center of eastern Polynesia, the *marae*, becomes the council house grounds in Samoa. It is therefore difficult to dissociate the religious functions of the kava ceremony from its social and political functions. The detailed etiquette of serving, the prescribed order of drinking, the use of special honorific cup names and the insistence that the beverage be prepared and served only by specially qualified persons have been tremendously important in dramatizing the whole system of Samoan rank and prestige. When the kava ceremony is completed there is little doubt of the status of those present and of the rights and privileges of their respective offices. Through continual ceremonial exercise, social relationships are reiterated and Samoan values are intensified. The result of this seems to be an unusual stability and resistance to change which is found among few other Polynesian peoples. In an attempt to explain this remarkable resistance to change, John Copp has commented, "Samoaan custom now serves as a 'refuge' from the conflicts of choice and judgment resulting from Western contacts."<sup>10</sup> Perhaps it has been the stabilizing influence of the kava cere-



Fig. 9. A Samoan dancer.

mony and other rituals that has allowed the Samoans to make satisfactory adjustments to European influences. Traditional aspects of Samoan culture such as the kava ceremony are, in a manner of speaking, bits of solid ground on which to anchor in a changing world.

It is believed that the influence of the

CONTINUED ON PAGE 57

### Lowell D. Holmes

#### A Biographical Sketch

Lowell D. Holmes earned his doctorate in anthropology at Northwestern University in 1957. Prior to that time he was head of the Department of Sociology and Anthropology at Missouri Valley College, Marshall, Mo., for three years. He is now serving his second year as Assistant Professor of Anthropology at the University of Wichita. Accompanied by his son, he spent a year in Samoa, in the village of Ta'u where Dr. Margaret Mead worked in 1925-26. There he restudied the Mead materials and first developed his interest in acculturation. His published works include several articles and book reviews on the Pacific cultures and his book, *Ta'u: Stability and Change in a Samoan Village* (Auckland: The Polynesian Society, 1958). In coming issues of *SCIENCE OF MAN* will be published articles on Polynesian navigation by Dr. Holmes.

# Lost Cities of Chiapas

By Fredrick A. Peterson

Field Director, New World Archaeological Foundation

DURING the time we had been excavating at Chiapa de Corzo, near Tuxtla Gutiérrez in the State of Chiapas, we heard stories of many ancient ruins in the Chiapan highlands. Many were just vague rumors, of course. Some of our informants on the other hand had actually seen them. Undoubtedly there had been flights of some kind or other over this area, but we had seen no record or aerial photographs actually showing ruins there.

A report had been made however of a large pyramid on the rim of the La Venta River Canyon. This canyon divides the municipalities of Ocozocoautla and Cintalapa. As it was very deep, the members of the New World Archaeological Foundation had not had an opportunity to visit its lower reaches. (See title photo.)

Being archeologists, we often wondered about these little known ruins. What kind of sites were they? Were these sites or supposed sites old or recent? How old? How many people actually inhabited the La Venta Canyon area where these ruins were supposed to be? Were the ancients Mayas or of some other culture? Since archeologists are inquisitive by nature, these and many more questions intrigued us. To the best of our knowledge no real work had ever been done in this

part of the state. The big Maya sites, Palenque and Bonampak, had been worked as had also our smaller site at Chiapa de Corzo. But how did these unworked sites fit in the jigsaw puzzle with the known sites?

An unusual opportunity came to us when Colonel and Mrs. John C. Adams, of the Panama Canal Zone, arrived in Tuxtla Gutiérrez on Friday, April 17, 1958, to see the work of our Foundation. Col. Adams offered the use of his own single-engine airplane for an archeological reconnaissance.

Gareth Lowe, then field director, Eduardo Martínez, and I gladly accepted the offer. Reconnaissance which would have taken weeks of wearing foot, horse, and jeep travel was reduced to a few hours.

Flying west from Tuxtla Gutiérrez, we passed over the town of Ocozocoautla. Here we circled several times to view the large archeological mounds of an ancient city south of the present city. This site, once called Javepaguay, was reputed to have been the capital of the Zoque nation.

From there we made a short trip north to view the country around Santa Marta Cave near Piedra Parada, Chiapas. Some

time before, Dr. Richard MacNeish of the National Museum of Canada and I had found the first remains of preceramic horizons in this southern region of Mesoamerica at this cave. From the air we could see several mounds to the south of the cave which we decided needed further investigation.

Leaving the Santa Marta Cave area we flew west, passing over the large El Gavilán Ranch. There we saw the remnants of several hundred house foundations and a number of shapeless large mounds. (Later reconnaissance on foot at El Gavilán revealed several caves with thousands of pottery vessels.) Next we flew several kilometers southwest over the town of Petapa and noted some earth mounds of a small archeological site.

Our next leg took us west over the ruins of Mirador, a large preclassic site near Colonia Vicente Guerrero. These ruins were in the same municipality of Jiquipilas where we were currently engaged in excavating.

We then turned north and followed the zigzag course of the La Venta River Canyon. Below us we could see a few sites which I had visited the previous year, but we did not find any large pyramid. We continued zigzagging be-

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tween both banks of the canyon until we crossed the boundary of Los Bordos Ranch.

Colonel Adams noted a prominent landmark in the form of a conical hill while flying over El Refugio ranch lands. We flew around the hill and discovered that a great part of it seemed artificial. It appeared that the base was a natural formation with two additional levels of large limestone slabs laid upon it in many courses. We suddenly realized it was the pyramid we were seeking! (Site M.) Around it we could see many mounds. Innumerable stones marked house foundations and there were other works of man, including dikes and check dams. The vast nature of these works suggested a major archeological center. We were not able to descend to make contact by foot because of the extremely rocky terrain. (Fig. 2.)

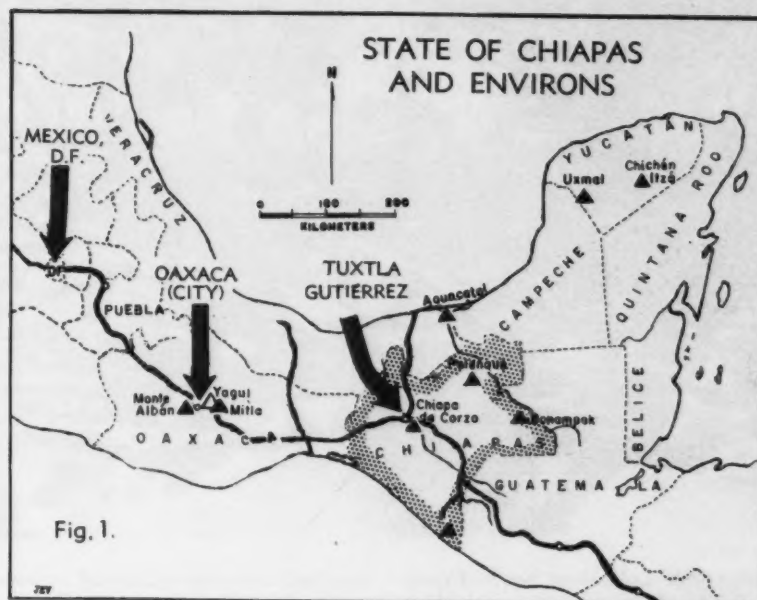
We grudgingly turned back, fearing our gasoline supply would fail, but decided to return to the site on horseback. Colonel Adams had to leave for the United States. The rest of us hired teenager Alberto T. Flores as helper. He was a tall, strong, and intelligent native of the region, whose father owned Hacienda Rosario and had horses to hire.

Two days later, Gareth Lowe, Alberto, and I started down the Pan-American Highway west of Tuxtla, in the NWA station wagon. Passing Ocozacoatlán we continued into the large Jiquipilas Valley. At kilometer 1010.7, a place called *Chupamiel* (sue-honey), we turned north onto an unimproved dirt road. After several miles of very rough road, alternately sandy and rocky, we came to a large plain with many small farms on each side.

Here the road ended at Rancho El Refugio. This ranch consists of 50,000 acres of rocky, dry, mountainous terrain. The ranch is administered by Jesús Pengas for the owner, General Jorge Grajales. Four saddle horses and two pack mules were brought to us from Hacienda Rosario, five hours' travel to the west, by our cowboy-guide, Ricardo Cruz Camacho.

We left Rancho El Refugio at 5:30 in the afternoon and followed a narrow, rocky trail southeast, leading over hilly terrain with low, dry brush. The trail gradually ascended to a high plateau full of jagged limestone rock, making riding difficult.

We reached Los Bordos Ranch just at twilight under a full moon. We were given permission to reconnoiter this ranch by Sr. Carlos Maciel, absentee owner who lives in Tuxtla Gutiérrez. The foreman-cowboy who administers the ranch lives there with his wife and two children. His home is the most miserable ranch house in the entire area. It is made of corrugated sheet metal on ragged limestone



rock foundations. [Ordinarily descriptions of poor conditions would not be permitted in a magazine article of this type. This description and others like it play such an important part, by way of comparison, that it was allowed to remain as it is not meant to be derogatory. Ed.]

Los Bordos Ranch covers about 2,000 acres, although its exact limits are rather tenuous. The entire ranch rests upon limestone rock that has been cracked, pitted, scarred, and upheaved. The white limestone plainly shows through the scant topsoil. Great quantities of limestone boulders, slabs, rocks, and pebbles are so scattered over the ranch that it is difficult to walk without watching every step. Only a few natural depressions are covered with soil and free from rock. It is difficult to conceive of land more inhospitable to farming or ranching than this. The plateau is gently rolling and most of its surface is covered with worthless scrub brush.

The ranch is bounded by the La Venta River Canyon. The canyon varies from

800 to 1000 feet deep and from a quarter to half a mile wide. The canyon walls are often absolutely vertical with a slight incline of talus at the bottom.

Los Bordos Ranch is completely dry for many months of the year. The shallow soil makes water runoff extremely rapid. All drainage is to the La Venta River.

The ranch has only one pass to the river, which all livestock must use. The cattle suffer as it requires two to three hours to make the trip up and down the canyon pass to the river. At the height of the dry season there is not a drop of water on the ranch plateau and many cattle die at the river's edge rather than ascend to search for grass.

Very few soil conservation and water collection activities were observed. Two or three shallow dams and some check basins were all that we noted. The disadvantages of living along the La Venta Canyon are truly formidable. Only a

Fig. 2. El Refugio Ranch area is one of the rockiest in the world. It is difficult to tell where an archeological site begins and where nature ends.





Fig. 3. Part of the **Pueblo Viejo** site on Los Bordos Ranch which contains several hundred tumbled down buildings.

dozen people and several hundred cattle can inhabit this thirty-mile stretch along the canyon.

How different are the modern and the ancient ways of living here! This thirty-mile stretch of canyon once supported from 10,000 to 15,000 people at a conservative estimate.

On the morning of the 20th, our horses had to be taken down the steep pass to the river for water. This necessitated several hours' wait. During that time Gareth Lowe and I made a reconnaissance on foot southwest of the ranch. To our surprise we found the area beginning about 500 meters from the ranch literally covered with the remains of ancient constructions, entirely of limestone. (Site A.) They included buildings, check dams, terraces, and other engineering works. The ruins are scattered and it is difficult to tell where the upheavals of nature end and where evidences of man's works begin. Undoubtedly many build-

ings took advantage of natural contours and heights. They were grouped around natural formations and blended into them. Most buildings were erected on small natural rises and were raised further by long limestone slabs.

The buildings were made of limestone slabs of sizes varying from one to six inches thick and from a few inches to several feet long. The slabs were used generally in their rough condition, just as they were split. Some had been smoothed, however, or had been cut along one or more faces. No mortar was used to unite these stones but the chinks between them were probably once filled with mud. Almost all of the buildings were in hopelessly unreconstructable condition.

Several of the larger mounds were made of great quantities of rocks piled up. They seemed to be the remains of corbelled vaults which had fallen in. There is nothing to substantiate this im-

pression, however. The limestone foundation slabs, only a few courses high, probably served as splash defenses. We assumed that the walls and roofs were made of more perishable materials, probably adobe or wattle and daub, as only the building outlines remained.

Most houses had small individual terraces attached. Each terrace seemed to be a flat place in front of the house, two to eight meters wide, outlined by field stone slabs or boulders. We noted some curious long flat mounds with a concavity made of piled-up limestone slabs at one end. The holes vary in diameter, but are usually a meter wide and deep. They may have served as storage pits.

A few houses were within talking distance of each other, but most were widely separated. No evidence of streets or suburban planning was spotted. The ridges and heights of the surrounding country were favorite places for house-building, although some ruins were on artificially terraced hillsides.

It was difficult to estimate the number of ruins in this area. We did not reach the end in any direction although we walked among the ruins nearly two hours. The ranch foreman told us later that they extended southwest for more than an hour's horseback ride.

The ancients evidently made maximum use of the land as we saw rock lined terraces for raising corn on every hillside. Also, every dry creek or sloping area had lines of stone across it to check the water flow of the rainy season. These dams followed sound contour engineering principles.

Today this territory looks forbidding for corn planting because of the tremendous erosion. The reason for the erosion was not readily evident. It may have been due to over-use by the ancient population. It may also have been due to a combination of over-grazing and burning off by modern cattlemen.

The tremendous contrast between the present ramshackle building, its four occupants, and less than 100 animals, and the great extent of ancient buildings which once housed many thousands of people was breathtaking and awe inspiring.

At last our horses were brought up and we rode toward the southeast. Rarely were we out of sight of the evidence of man's handiwork. We passed several hundred ruins (Site B), all made of loosely piled limestone slab foundations. There were probably many more that could



Fig. 5. The Cave of the Bows, Cueva de los Cajetes, on Los Bordos Ranch, had a man-made wall which sealed off the entrance from the first inner chamber.

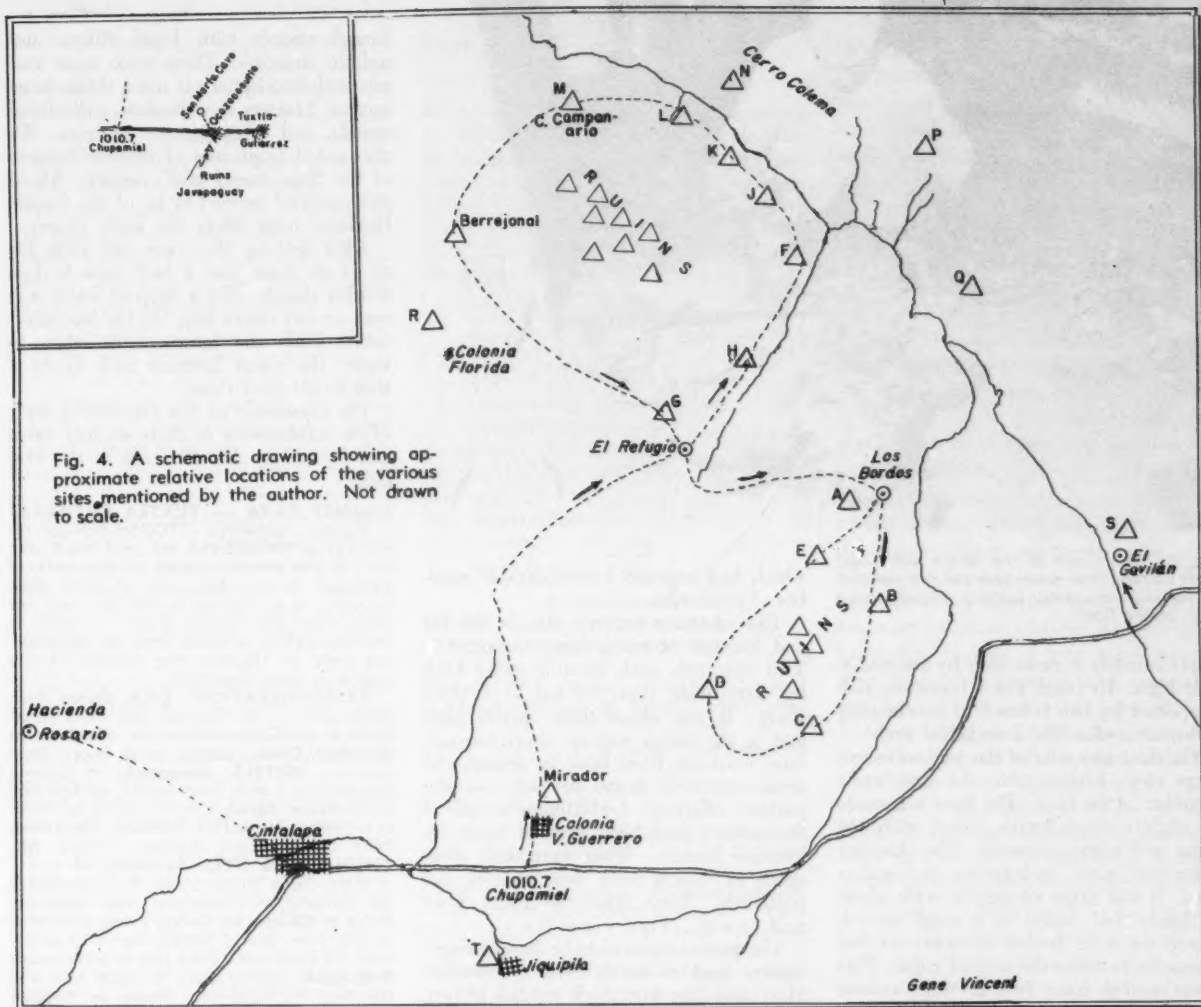


Fig. 4. A schematic drawing showing approximate relative locations of the various sites mentioned by the author. Not drawn to scale.

not be seen in the underbrush and undulating territory. There were ruins in all but two of the dozen small valleys that we passed. Most of them were very unimpressive, consisting of little more than outlines or shapeless heaps of stone. They were of many sizes and shapes: square, rectangular, and ovoid. Some foundations were perfectly round.

The country was very dry. The only vegetation consisted of low xerophytic scrub brush, short wiry grass, and small, spiny, straggly trees which gave no shade. These not only relieved the barren aspect of the landscape but also rested eyes tired from looking out over tremendous fields of broken and jagged limestone.

We rode for about two and a half hours in a general southeast direction, away from Los Bordes Ranch. At one spot (Site C), we saw about a hundred ruined structures. These like all the rest were of limestone slabs. Some walls, one to three feet high, still stood. A few larger solid mounds were scattered in thickets of spiny bush and *pirul* trees

[pepper trees]. Pottery of the late Classic or early Post Classic Period had been scattered around the zone by livestock. Some of the rooms seem to have had only three sides. The downhill side was open.

We saw six ruined structures, quite close to one another, in a perfectly straight line. That was the only evidence of city planning seen in this territory. Most of the buildings were scattered around in a completely haphazard fashion. Remnants of house walls and foundations covered the entire valley of about 600 or 700 meters in circumference. According to Ricardo, our cowboy guide, these ancient ruins extend two more kilometers in all directions. My opinion was that they might end at a spot termed *Pueblo Viejo* which I explored previously.

On the return trip we took a semi-circular route to the west. In about an hour and a half we came to a small undistinguished valley about a kilometer from the El Refugio-Los Bordes trail. This particular spot (Site D) had a dense thicket of tall trees bordering it. There

were some flowering plants and cactus surrounding an old limestone sinkhole. The sinkhole, now called *Cueva de Los Cajetes* (Cave of the Bowls), had a vertical entrance 1.5 meters deep and very irregular in shape. On one side of this opening was a small side opening about one meter in circumference which also allowed entrance to the cave.

Below, we came upon a slightly sloping floor covered with thick limestone slabs. They had either tumbled into the opening or had split off the roof. The cave widened and deepened, reaching a maximum of five meters wide by three high.

The entrance was sealed by a wall of limestone slabs. (Fig 6.) They had been selected or cut to size and were laid in neat fashion, two slabs thick. It was very sturdily constructed. Although no mortar was used, loose spaces in the rock had been partly filled by rough wedges and pieces of limestone. The wall did not join the cave roof but a few wedges were inserted along the top to give stability. The wall had a doorway



Fig. 6. The Cave of the Bowls was filled with pottery. Here one can see the remains of several thousand pottery vessels piled high on the floor.

approximately a meter wide by one-and-a-half high. Its lintel was a limestone slab supported by two courses of overlapping slabs, somewhat like a corbelled arch.

On the inner side of the wall were two large steps leading into the first inner chamber of the cave. The floor was made of slightly damp earth mixed with bat dung and a few potsherds. The chamber contained many stalagmites and stalactites. It was large enough to walk about in freely, but ended in a small tunnel. There we were forced to crawl on our stomachs to enter the second room. This room varied from two to three meters high by five meters wide. The silt floor covering was quite thick. We could see a dozen holes dug by treasure hunters,

Fig. 7. There are many caves on Los Bordes Ranch, most of which have several hundred offering bowls piled up in the inner chambers.



which had exposed a considerable number of potsherds.

This chamber tapered also at the far end because of many large stalagmites. Two openings, each about a meter high by sixty wide [cm. ?] led to a third room. It was about three meters high and in the center was an enormous column reaching from floor to ceiling. All around it were heaps of pots—an important offering! Unfortunately, all of the pottery had been stepped upon by treasure hunters. What were once thousands of vessels were now nothing but potsherds. They filled the room from wall to wall. (Figs. 7 and 8.)

The pottery appeared to be from a single culture and evidently was ceremonial. Most abundant were thick, reddish brown, saucer-shaped vessels. They were made of coarse paste without a slip, with a very rough surface and a white band about the rim. Next were black vessels with triangular incisions and dirty white, fired rims. Also typical were flat bot-

tomed vessels with basal ridges and nubbin supports. There were squat vessels with hemispherical sides, thick, large incense braziers now broken, cylindrical vessels, and effigy incense burners. We also noted fragments of incense burners of the "loop-nosed god" variety. All of this material seemed to be of the Classic Horizon, most likely the early phase.

After leaving this cave, we rode for about an hour and a half back to Los Bordes Ranch. Not a drop of water was seen on our entire trip. In the late afternoon, while the horses were taken to water, the ranch foreman took us on a walk to see other ruins.

*The remainder of this fascinating story of the exploration of these ancient ruins will be told by Mr. Peterson in the next issue.*

#### TOURIST DATA — TUXTLA GUTIÉRREZ

Tuxtla Gutiérrez (TOOSH-tlah-goo-te-AIR-res or TOOSKS-tlah etc.; roll the double "r") is the present capital of the state of Chiapas. It is a busy city of more than 30,000. It is located in the hot belt ten miles from the Chiapa River. In spite of the fact that it is hotter than the neighboring state of Oaxaca, the climate of the capital is quite healthful.

**TRANSPORTATION.** CMA planes from México, D. F., via Oaxaca, and from Tapachula on the Guatemala border. **Cooperative Cristóbal Colón**, second class buses from Oaxaca. **HOTELS.** Bonampak, in Colonia Moctezuma 1 mile from center, modern and comfortable. **Jardín**, on the zocalo at Primera Norte 7. **AUTO REPAIR:** Chevrolet, Ford, Dodge, Nash, Packard, Willys. **ARCHEOLOGICAL SITES.** Palenque, NE corner of state. Take Tuxtla plane, Aerotransportes del Sureste to Tenocique, then railroad. **Ruins at Chiapa de Corzo**, being excavated by the New World Archaeological Foundation, 10 miles out. Take taxi or private car. **Bonampak**, charter plane to Agua Azul and continue on muleback. **Museo de Arqueología**, 2a Oriente 19, local archeological displays.

#### Art Forms

CONTINUED FROM PAGE 41

designs. The checkerboard pattern on an Egyptian vessel mirrored the neatly laid out field. The symbol for field appeared in the picture writing of the Chinese.

As the basic shapes of baskets and clay bowls evolved to house the food surplus, so followed the architectural design to house man. The bowl developed into the hut — a permanent structure. Earliest farmers had been content with simple wind screens of vegetal materials plastered with mud. Later houses of pressed mud or *terre pisee* were made in Egypt and Asia. Long before 3000 B.C., brick came into Syria or Mesopotamia. Stone was utilized only in a limited sense. Piled stones created religious monuments. The Neolithic peoples devised the basic formulas to solve the problem of the creation of enclosed interior space — the post and lintel, the gable, the corbel arch, the true arch, etc.

Architecture is the frozen echo of the societal pattern. As cultures advanced,

the basic family unit expanded horizontally and vertically into more complex groupings of kin, mythical relations, political organizations, etc. Architectural development corresponded to the new demands for buildings to house secret societies, chiefs, and tribal councils.

The paraphernalia to meet the secular and sacred needs of the society grew. The artistic talents of the community decorated the clan symbols, the crests of secret societies, and the sacred objects.

One example of a native form of expression used to indicate membership in a tribe or clan or in a secret society is scarification. Several of the West African secret societies have much ritual connected with their rites. The Poro Society, for example, has ceremonial masks made of black wood. These are rich in scarification markings (Fig. 4). Canoe carvings from the Trobriand Islands are made by those technically trained in the proper magic incantations and formulae to use in manufacture in order to insure the proper value of the carved object. (Fig. 5.)

The arts are a key to man's development. During the Neolithic and later, man learned to group himself and to make use of animals and plants. His paintings, knives, masks, plows, and houses tell us as well as would many prose works the forms of Neolithic culture.

#### SAMOA — TOURIST DATA

Samoa (in the native language pronounced *saa-Mo-a*) is an archipelago or chain of islands in the South Pacific. They are the peaks of a submarine chain of volcanic mountains, partially encircled by coral reefs. The archipelago is divided for political reasons only into two groups. **Western Samoa**, controlled by the British through their New Zealand administration, consists of the two larger islands, Savaii and Upolu. **American Samoa**, under the supervision of the Department of the Interior consists of the eastern group of smaller islands. Apia, on Upolu, is the capital of Western Samoa, Pago Pago (pronounced PONG-go PONG-go), on Tutuila, is the capital of American Samoa.

**INHABITANTS.** The indigenous inhabitants of Samoa, like those of most of the other islands in the Central Pacific are Polynesians. Many believe these people are basically Caucasoids though mixed in varying degrees with the other races. They arrived in the Samoan Islands and in other islands of Polynesia hundreds of years ago in several successive migrations from the mainland of Asia, through the islands of the East Indies and the Micronesian Islands. They differ from their neighbors, the Micronesians, to the northwest, and the Melanesians, to the southwest in their physical characteristics. The Micronesian and Melanesian peoples have more Negroid and Mongoloid traits. Samoa may have been the "jumping off place" or Hawaiiki of the early immigrants from Asia. From here they spread to the other islands of the Polynesian group.

While most of the original Polynesians undoubtedly came from an Asiatic homeland, there seems to be some evidence that a few migrants could have joined them from the South American coast. A few years ago, anthropologist Thor Heyerdahl and several

## Samoa Kava Ceremony

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kava ceremony is one of the explanations for the amazing stability of a people who, as Douglas Oliver puts it, have survived "the strong impact of western civilization without changing their everyday lives and without losing their numbers, their strength, their dignity, or their zest for a good fight."<sup>11</sup>

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companions set out in a balsa raft from the shores of South America in an attempt to determine whether the pre-Inca inhabitants of Peru could have sailed or floated to Polynesia. He succeeded in determining that such a trip in an open boat or raft could have been made. A few hardy mariners may have done so. He did not succeed in proving that the bulk of the Polynesians came to the islands from that direction.

**LANGUAGE.** The language of Samoa is actually a dialect of the great Polynesian tongue, spoken throughout this area. It is related to the dialects of Micronesia, Melanesia, and more distantly, to that of Indonesia. (By a careful comparative study of the language dialects [scientifically known as glottochronology] it is possible to determine approximately when each different language group [or island group] split off from the rest. The study of the language dialects and glottochronology is the best proof of the Asiatic connections of the Polynesians, and of the route by which they arrived at their present home islands.)

**RELIGION.** The Samoans, like the other Polynesians, were once polytheistic. Now nearly all of them have accepted Christianity

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## Bonampak

CONTINUED FROM PAGE 45

*bonds and Quest for the Lost City* which were read by thousands. His stories while entertaining do not give a true picture of these primitive people. Since that time, other explorers and anthropologists have published much more information about them.

The Lacandón Mayas usually let their hair grow long and make little or no attempt to keep it from covering their faces. Both sexes wear their hair and dress alike. Their main item of clothing is a long and quite shapeless robe worn only as a protection against the heat and insects.

Ordinarily they are monogamous. Due to the scarcity of eligible mates and to the many taboos connected with marriage, on occasion one male has taken two wives, has married his sister, or has taken an infant as a bride. According to Lacandón custom, a man *must* have a wife to do his cooking and make his tortillas. About ten years ago, Bor, a widower well over fifty, had difficulty in finding a wife who could satisfy the marriage taboos. By necessity he married a five-year-old girl. She is now about 15 and has made Bor an excellent wife in spite of the difference in ages which we would feel restricting. In spite of his fifty or more years in the tropical jungles, Bor does not look over 35.

In many other ways also, Bor is an interesting character. He still adheres to the old religion, wears his hair long, and uses the regular Lacandón type garment. His time, when not in the jungle, is spent at Na Bolom, the home of anthropologist Frans Blom and Mrs. Trudy Blom in San Cristóbal Las Casas. Bor's two sons cut their hair European style. The Bloms are sending them to school. The sons, as well as Bor's wife, want to stay in civilization, but Bor prefers to commute between the jungle and Las Casas.

Another interesting sidelight on the Lacandón customs comes from Frans Blom. Occasionally Bor is mistakenly called *Na-Bor*. In Lacandón Maya *na* means house. In addition, it can mean anything pertaining to the house, even including a wife. The wife of Bor, therefore, could properly be called *Na-Bor*. To call Bor that, however, would definitely be impolite or even insulting. Ed.

For biographical sketch of Otto Done see page 69.

This is the fascinating story of the years of time, effort and work that led to the final —

# Radiocarbon Dating At Lindenmeier

By George A. Agogino

THE FIRST human being to set foot in North America had already arrived late in the total span of human existence. In Europe and Asia man had lived for nearly a million years under conditions that were far from ideal. Human population during the major part of this period was sparse. Human hope of survival depended primarily on three features: Man's big and complex brain, his upright gait which freed his hands from the duties of locomotion, and an opposable thumb that made these emancipated hands capable of material creation that allowed him better to utilize the environment about him.

With this advantage man was able to survive four glacial periods that crushed large sections of the northern latitudes with continental ice sheets. The interglacial periods in contrast were hot and humid. Many forms of animal life larger and stronger than man perished during these climatic changes when they failed to adapt and were unable to utilize available environmental resources. Mankind in one form or another managed to survive this period because of a unique ability to adapt culturally in order to maintain organic homostasis. [Homostasis, continuous or even condition or standing, i.e., continued to exist as such.]

The first human types faced an unpromising future using simple bone, wood, and lithic [rock] tools that remained largely unchanged throughout most of the lower paleolithic period. In spite of inadequate use of the environment, early *hominids* managed to exist, multiply, and spread over most of the Old World. [Hominid, a manlike being or pre-man. Ed.]

By the final stages of the last glacial period, the stage was set for the paleo-Indian, truly the first American, to enter the New World. This first entry is considered by many to have occurred from 20,000 to 50,000 years ago. The majority of American archeologists feel the most likely route was across the Bering Strait.

However, throughout the first quarter of the present century few professionally trained archeologists believed that the earliest ancestors of the American Indian had entered the New World more than

four or five thousand years ago. A few voices called out in the wilderness that human remains could possibly be associated with the Pleistocene in the New World, but the few who did so wasted their words on skeptical contemporaries. The most classic example was the famous Natchez pelvis.

## Early Evidence

During the year 1846 Dr. M. W. Dickenson exhibited a paleontological collection at the Philadelphia Academy of Natural Sciences. The collection consisted of fossilized skeletal material obtained from a site located near Natchez, Mississippi. Almost all of the fossilized remains were collected in or close to a recent channel known locally as Mammoth Ravine. Much of the skeletal material was found *in situ* but a great many bones eroded from the productive blue clay stratum had fallen to the base of the ravine.

Among the redeposited fossilized bones was a section of a human pelvis. This human skeletal material was fossilized and had the same color and texture as the Pleistocene animal remains that had almost certainly eroded from the glacial deposit exposed in the vertical bank directly above. Associated with the human pelvis were found the bones of a ground sloth (*Megalonyx*), an extinct type of horse (*Equus* *bos*), and a mastodon (*Mastodon ohioiticus*).

As late as 1895, fluorine tests indicated that the human pelvis and one of the associated bones of *Megalonyx* were probably of the same age, yet the majority of archeologists refused to consider this chemical evidence seriously.

Little attention was paid to the Natchez site until 1954 when George Quimby attempted to relocate the original spot from which the bones had eroded. Unfortunately, by this time erosion had destroyed most of the original site area although fossilized remains of Pleistocene animals were still to be found occasionally. Had acceptance been forthcoming at an earlier time, this site might well have been one of the most important paleo-Indian sites in the New World.

We must remember that the Natchez pelvis was but one of many such dis-

coveries in the nineteenth and the early part of the twentieth century. Hrdlicka's influence was at its height during the early part of this century and he was zealous in denying the antiquity of man in the New World. He defended and championed, with missionary zeal, the belief that the American Indian was post-glacial. He stubbornly clung to his belief that if paleo-Indian skeletal material were eventually discovered it must be primitive in skeletal construction. Today we are almost certain that Early Man in America was physically an advanced type of human being and essentially similar to modern Amerinds.

The influence of Hrdlicka and his students began to weaken under a succession of important paleo-Indian discoveries in the early 1920's. It finally collapsed under the impact of the 1927 excavations at Folsom, New Mexico.

## The Folsom Discoveries

In the spring of 1926 a Negro cowboy looked for stray cattle on a ranch near Folsom, Union County, New Mexico. As he followed a recently formed arroyo, his eyes caught sight of eroding skeletal remains, twenty feet below the top, and on the far side of the arroyo. The cowboy was tired, uneducated, and in a hurry to reach the bunkhouse. Had he gone on, no one would have blamed him. But he did not. Intellectual curiosity is not confined to the formally educated.

The bones resembled cattle bones, but the depth and coloration of the remains seemed unique, even to this poorly educated, perhaps illiterate ranch hand. The cowboy removed a few long bones and brought them to the attention of Fred J. Howarth and Carl Schwachheim of Raton, New Mexico. They in turn sent samples of the skeletal remains to the Colorado Museum of Natural History. The bones were identified as belonging to a huge, straight horn type of extinct bison later named *Bison antiquus figginsi*. It is believed this animal died out at the close of the last glacial period.

In April 1926, Harold J. Cook and Jesse Dade Figgins visited the site to prepare the area for eventual excavation. Frank M. Figgins eventually was placed in charge of the actual excavation which

began in July, 1926. Early in the excavation of the bison skeleton a point was discovered. Unfortunately, the artifact was not recovered *in situ* and the base of the point was missing.

Work continued now with the greatest caution. Nothing further appeared until the very close of the digging season when a second point was found, again after it had fallen from its original location. It was almost identical to the first artifact and, like the original point, lacked the base. The location from which the point had been dislodged was found, and shortly afterward a fragment of flint was noticed in the matrix. The entire section surrounding the flint was then removed to the laboratory where extreme care was taken. Under the most careful handling the missing base of the second point was uncovered adjacent to one of the ribs of the long dead animal.

It seemed that now there would be no question as to the validity of paleo-Indians coexistent with extinct Pleistocene animal life, yet the skeptics still ruled the field.

During the following winter, J. D. Figgins, who was then Director of the Museum, sought unsuccessfully to convince archeologists of the validity of this association. Most of the scientists, however, inclined to the belief that, in spite of the appearance of clear association, there had been some mixing of the material and that the flaked stones were of a later date and were intrusive.

Thus, it must be realized that less than thirty-four years ago the belief in the existence of the paleo-Indian was shared by only a few, and that the vast majority of professional archeologists continued to reject this existence even as evidence for it mounted before their very eyes. The conservatives still controlled the field, but before the passing of another year their power would be dissipated in the face of new discoveries at Folsom, New Mexico.

#### Verification

The staff of Colorado Museum of Natural History began its 1927 season in the field determined to prove direct association between the paleo-Indian and glacial fauna. Under the direction of the previous year's field supervisor, J. D. Figgins, work continued on the excavation at Folsom. During the early part of the field season, four broken points were uncovered. Typologically they were almost identical to the two points found the previous season. The frustrating aspect of each discovery was the fact each artifact was found only after it had fallen free of the matrix.

The fifth point found during the excavations of 1927 at Folsom was not only typologically similar to the six points excavated at the site but it was found *in situ*. Not only was the projectile ex-

posed while still in the matrix, but the point was snugly situated between two ribs of an extinct bison.

Immediately all work was stopped. Telegrams were sent to all the leading institutions in the country inviting them to send representatives to view the important discovery. The resulting representation was most disappointing. Barnum Brown of the American Museum of Natural History and Frank H. H. Roberts, Jr., of the Smithsonian Institution were the first to arrive and two days later A. W. Kidder of Phillips Academy, Andover, Massachusetts, became the third and final representative to visit the site. Not a single college or university in the entire United States was able to send a representative to the site.

Barnum Brown, A. V. Kidder, and Frank H. H. Roberts, Jr., studied the artifact *in situ* and endorsed the authenticity of the association in a joint statement. In spite of the known competence of these scientists there remained considerable skepticism among many, perhaps most, archeologists.

A joint expedition was planned the following year by the Colorado Museum of Natural History and the American Museum of Natural History. Once again projectile points were located *in situ* under conditions that showed direct association with glacial fauna. Once again telegrams were dispatched to representative institutions across the country. This time the response was most encouraging. Many archeologists of stature and reputation visited the site and this time became convinced of the validity of the association between the lithic artifacts and the skeletal remains of glacial animal life.

In the three years of excavation at Folsom, New Mexico, nineteen points were uncovered. They were considered typologically related. Geological interpretation by Harold J. Cook indicated they were of the same age as the remains of twenty-three extinct bison (*Bison antiquus figginsii*).

#### Folsom Points

These strange points were not the work of crude craftsmen. Two to three inches in length, they were beautifully chipped by the fingers of long dead stone craftsmen. The artifacts were flaked, then fluted, like a bayonet on both sides, with the removal of a single bold flake from each face of the artifact. After a final retouch to sharpen the cutting edges, the lower edges of the point were ground to prevent cutting the hafting.

In the reconstruction of the bison bones one seemingly inexplicable fact occurred over and over again. The tail bones of most of the animals were missing. The mystery was clarified when it was pointed out that in skinning animals the coccygeal vertebrae are usually removed with the skin. This suggests that the Folsom hunt-

ers killed for more than just food, and that they also used the heavy hides of the glacial bison.

The original site at Folsom, New Mexico, is not an extensive one. Geological evidence indicates that during the late Pleistocene a small lake attracted animals to the area. The Folsom hunters apparently utilized this site as a hunting location.

Following the acceptance of the Folsom discovery in New Mexico, professional and amateur archeologists looked for additional sites of this nature wherever man, wind, or weather had scarred the surface of the earth exposing the proper strata to the human eye. Within a decade of the original discovery, classic Folsom points were found from Canada to Central America.

While most of the site concentration seems to be located in the high plains, that is, the area just to the east of the Rocky Mountains, occasional Folsom projectile points are found as far east as the Atlantic seaboard. However, with a few exceptions, little classic Folsom material is located west of the Rocky Mountains.

Of special interest is the character of the major Folsom sites known at this time. With one exception, the Lindenmeier camp site in northeastern Colorado, all of the other Folsom sites were "kill sites," all represented a single hunt and a short time occupation.

#### Many Tools Found

It was from this Lindenmeier site that most of our knowledge of the Folsom hunters has been obtained. We know that in addition to points, there were also many other tools used by these ice age hunters. Two knife types have been identified. One has longitudinal fluting and secondary chipping on the edges, while the other is made of long channel flakes, the byproducts of fluting. In addition, there are distinctive hide scrapers, graters, decorated bone, paint stones, and stone beads.

It is presently believed that Folsom man lacked the bow and that the Folsom points were utilized as the tip of a light javelin, thrown either by hand or with the aid of an atlatl or spear thrower. Armed with such flimsy weapons, the task of hunting and killing huge extinct animals must have been both difficult and dangerous. Indeed it establishes the belief that these men enjoyed community life and were capable of complex organization, for only under these conditions would big game hunting be feasible.

From the erosion-scarred sections of the west came other discoveries to challenge the antiquity of the Folsom hunters. From the lowest cultural level of a limestone cave in the Sandia mountains of central New Mexico came unique one-shouldered points known today as Sandia points.

Centering in the southwestern United States and Mexico, a second seemingly pre-Folsom point was found and named the Clovis-fluted point. Both the Sandia and Clovis hunters are believed to have lived and made their artifacts one or more thousand years before the advent of the Folsom culture. At both the Sandia and Clovis type sites these points are found in lower layers than the projectiles made by Folsom people.

On the other hand from Yuma County, Colorado, many long lanceolate points were uncovered by extreme wind erosion. Today these handsomely flaked projectile tips are known as Angostura, Agate Basin, Scottsbluff, Eden, Jimmy Allen, or Hell Gap points. Frequently they are classified under the single term "Yuma," and most if not all are believed to be a thousand or more years younger than Folsom implements.

However in spite of the known existence of paleo-Indian cultures, both older and more recent than Folsom, it is the Folsom complex that continues to be the hub around which all other Early Man cultures are related. Possibly the frame of reference exists because the Folsom culture was the first of the many paleo-Indian assemblages to be clearly defined and widely accepted. This reference continues today even though until recently many of the other cultures were far better established chronologically than the Folsom itself.

#### *Dating*

The radiocarbon dating process is today the most valuable dating method known to the field of archeology. At the midpoint of this century outstanding physicists and chemists united their respective abilities in developing this unique process. These men noted that all living organisms absorb radioactive carbon into their system in roughly the same amount and that this radioactivity decreases following death. The rate of decrease is constant and slow and by a complex measurement scientists can determine the length of time the organism has been dead. This dating method is presently workable up to about 70,000 years depending upon the sensitivity of the equipment and the size and purity of the sample. It is generally conceded that burned wood or charcoal is best for such dating, although shell, tusk, teeth, and unburned bone have been used with reasonable success.

Until recently the only Folsom site to be radiocarbon-dated was the Lubbock site, but it must be pointed out that the Lubbock date used samples of burned bone and fresh-water snails rather than the more acceptable and accurate wood charcoal. These dates indicate the occupation of the Lubbock site by Folsom hunters as being between 9,000 and 10,000 years ago.

The lack of additional charcoal samples from Folsom sites is not due to the lack of individual effort. Following the acceptance of the original Folsom discovery, professional and amateur archeologists looked in road and railroad cuts, river and arroyo banks, caves and blowouts for new Folsom locations. Many such sites were found, but in spite of intensive effort, until recently no charcoal samples could be acquired.

#### *Widespread Sites*

The newly discovered Folsom locations were concentrated in the area just east of the Rocky Mountain chain.

The State of Montana has one recognized site — the MacHaffie location, just south of Helena. Wyoming is also represented by only one excavated Folsom horizon, the Brewster site, where Folsom points were found underlying Agate Basin in eastern Wyoming. Arizona is without a single well established Folsom location, but neighboring New Mexico has several in addition to the type site of Folsom. Actual site locations or concentrated surface assemblages are found scattered throughout the northern half of the state.

In eastern New Mexico, Folsom is found in the Clovis-Portales region as well as at Pleistocene Lake Estancia and Sandia Cave. In the western part of the state Folsom concentrations are to be found in the San Augustine plains and in the blowouts in and about the city of Grants.

West Texas is represented by Folsom sites at Lubbock and Midland as well as at the Lipscomb Bison Quarry. In addition to these published locations, Dr. Joe Ben Wheat of the University of Colorado Museum has a Folsom site yet to be excavated in southwestern Texas.

Colorado reveals classic Folsom material at the Linger and Zapota sites in the San Luis Valley in south central Colorado, and at the Powars and Johnson sites in northeastern Colorado. Furthermore, scattered surface material has been found in the Uncampahgre plateau of central Colorado and in the area about Grand Junction. However the largest, most extensive, and most productive of all Folsom locations known at this time is the famous Lindenmeier site in northeastern Colorado, within a few miles of both the Johnson and Powars sites and the Wyoming state line.

#### *The Lindenmeier Site*

Rather than being a "kill site," as are most of the other known Folsom locations, the Lindenmeier location is a camp site and was apparently utilized over a long occupation period. Work at the site was conducted during the 1930's by both the Smithsonian Institution and the Denver Museum of Natural History.

During the period of active excavation several hearths were uncovered but since this research predated the discovery of

the radiocarbon dating process, the material was either discarded or coated with a preservative that rendered the samples worthless for this type of dating.

Following the discovery and use of the radiocarbon method, several attempts were made to obtain charcoal from the Folsom horizon by individuals not familiar with the complex geological situation. These ended either in failure or produced erroneous and relatively recent radiocarbon dates that conflicted with both the Folsom fauna assemblage and the known geologic picture.

Later surveys of the Folsom horizon, as exposed along the major arroyos at the site location, indicated that further attempt to collect radiocarbon material from this source would be tedious, time consuming, and costly. As a result no concerted attempt was made until May 1959.

In 1959 paleontologist W. D. Frankforter of the Sanford Museum, Cherokee, Iowa, geologist C. V. Haynes (then of the American Institute of Research in Denver, Colorado), and the author visited the site to determine whether the collection of radiocarbon material was feasible. The opinion of the group was that such a collection was possible but difficult. Since W. D. Frankforter would need to travel a prohibitive distance, he dropped out of the proposed project at that time.

#### *A New Effort*

In June of 1959, permission was secured from Dr. Frank H. H. Roberts Jr., of the Smithsonian Institution, to conduct limited excavations at the Lindenmeier location for the purpose of obtaining a radiocarbon sample. Shortly afterward the actual field work began. Work began on a frequent but irregular schedule and continued through the fall and winter of 1959 and into the spring of 1960.

Attempts were made to secure burned and unburned bone as well as charcoal from the exposed Folsom horizon in both the north and south walls of the major arroyos as well as from the area in and about the area known as the bison pit. This research was partly supported by two grants awarded by the American Academy of Arts and Sciences. The initial grant, awarded in 1959, helped defray the travel expenses involved in the collection of radiocarbon samples. The second grant, awarded in 1960, allowed the processing of the most adequate of these samples.

The bulk of the field work was almost individually the work of Haynes and myself although we were assisted in the later phases of this research by students from University of Wyoming classes in archeology. Approximately seven hundred man-hours were required before the first charcoal sample of three grams was taken from the Folsom horizon. This

averages roughly 15 man-hours a week through the heat of summer and the bitter cold of the mountain winter, patiently picking flake after flake of charcoal from the Folsom horizon until charcoal enough to fill a small pill bottle had been collected.

This sample was submitted to Isotopes Inc., a radiocarbon laboratory in Westwood, New Jersey, for processing. The resulting analysis gave a date of 10,780 years for the occupation of the Lindenmeier camp site by the Folsom people. The sample was given a possible error of 375 years suggesting that this occupation occurred roughly between 10,500 and 11,000 years ago.

This date, while nearly one thousand years older than the burned bone and shell dates from the Folsom level at Lubbock, Texas, still falls clearly within the geological estimates of geologists Kirk Bryan, Louis Ray, John Cotter and Vance Haynes, all of whom worked at Lindenmeier. In addition, this evidence is supported by most paleontologists who believe the North American camel was very rare or had completely died out about 10,000 years ago. Of all the known Folsom sites, camel bones are found only at the Lindenmeier camp site. Thus, on the basis of known radiocarbon dates, geologic chronology, and paleontological fauna it now appears that the Lindenmeier site, the only known Folsom camp site, is also the oldest Folsom site yet discovered.

[For a more technical presentation of this material, see *Geological Significance of a New Radiocarbon Date from the Lindenmeier Site*, by Vance Haynes and George Agogino, published by the Denver Museum of Natural History, Denver, Colo., as Proceedings No. 9, August 15, 1960. Ed.]

A few years ago, American archeologists found the Biblical city of Gibeon near el Jib, eight miles north of Jerusalem. Gibeon, mentioned 43 times in the Bible, is described in the Old Testament as "one of the royal cities." Archeologists believe that this Jewish city was built before 1200 B.C. and reached its peak between 800 and 600 B.C. The city covered an area of 16 acres and was surrounded by walls ten feet wide, widened to 26 feet at critical points where fortified towers were built.

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SCIENCE OF MAN

## Anthropological Notes

### Neanderthal Relationships

Some prototypes of modern man and the beetle-browed Neanderthals of the last ice age in the Old World — quite different human varieties — lived close together in the Near East, but probably did not mix, about 50,000 years ago.

This is the conclusion of Dr. T. Dale Stewart, Smithsonian Institution curator of physical anthropology, from a close study of pelvic bones of fossil skeletons found in the caves of Mount Carmel, Palestine, and of Shanidar, Iraq. The Neanderthals have been presumed to have preceded the human variety of today by millennia.

The evidence from his study, Dr. Stewart reports, is that the more primitive type lived in the Shanidar cave and both types lived in the Mount Carmel caves in, roughly, the same general period, although they may have been separated by several centuries. The skeleton from one Mount Carmel cave, es Tubun, is hardly distinguishable from

remains of the classic Neanderthals of the last ice age in central Europe. Those from the neighboring caverns, es Skhul, depart far from this pattern, he says, and "are in many ways remarkably similar to those of modern man." This, he points out, is shown even more clearly by fragments of pelvic bones than by fragments of skulls.

From studies of the peculiarities of Mount Carmel skulls, he says, there have been two interpretations: First, the Mount Carmel People were in throes of evolutionary change. Second, they arose from hybridization of a Neanderthaloid and modern type, these types having been formed early in different geographical regions.

But, reports Dr. Stewart, "neither of these explanations now seems completely logical. To my way of thinking it is simpler and more reasonable to recognize the two types as fundamentally distinct.

"There is no reason now to regard the Skhul specimens as anything other than representatives of an early variety of modern man. The Tabun specimens then become representatives of the local Neanderthal variety which probably went on to extinction. All this does



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away with the need of setting up hypothetical types and for assuming that the whole lot of Mount Carmel skeletons represents a single breeding population.

"It may be objected that spatial separation is required to maintain the distinctiveness of human varieties and that the Mount Carmel caves did not afford such separation. In general this is a valid objection, but as yet there is no proof that the recovery of two different varieties of man from a cultural layer which accumulated over thousands of years in the Mount Carmel caves necessarily means physical contact between these varieties.

"Separate occupation of the caves at different times by these distinct human varieties could have taken place while they were living in the surrounding area as breeding isolates. Such an explanation often has been precluded in the past by the dubious assumption that all remains of ancient man have to be fitted into a straight evolutionary line."

Last summer Dr. Stewart carried out a close study of the skeleton of a Neanderthal man from the huge cave in the Kurdish country of northern Iraq.

This skeleton, believed to be nearly intact after about 50,000 years since the individual's death, will be excavated

by a joint Smithsonian Institution-Columbia University expedition financed by the National Science Foundation, which left for the Near East recently. It is led by Dr. Ralph S. Solecki, assistant professor of anthropology at Columbia. This is Dr. Solecki's fourth expedition to northern Iraq.

From the same cave in the Shanidar Valley of the Zagros Mountains he excavated the remains of a Neanderthal infant in 1953 and most of the remains of three adults in 1957.

The skeleton to be excavated on this trip was located three years ago, but only the skull was removed, owing to the obvious labor that would be required to obtain the complete specimen. Dr. Stewart will work at the cave itself only while the skeleton is being removed and then will return to Baghdad where there are facilities for intensive examination of the bones.

The Neanderthal type skull, beetle-browed and generally primitive looking, is known chiefly from European specimens of greater age. At least in Europe, the type preceded the appearance of modern man. Sometimes a direct ancestral relationship has been postulated. This thesis, however, has now been largely abandoned. Both types presum-

ably were derived from an as yet unknown common ancestor.

The Shanidar material is quite similar to that of Europe, but shows certain differences which are throwing light on the late stages of the development of the genus *Homo*.

(Smithsonian Institution, May 24 and July 7, 1960)

## Was the Cubit Used Here?

David Vincent, physics student at Long Beach State College, who several years ago propounded the theory that the ancient Zapotecs used the arm length as a unit of measure, is still working on the theory. As a high school student and college freshman, he lived with his parents at Mexico City College's *Centro de Estudios Regionales* in Oaxaca.

Being more interested in architecture than in archeology, he made accurate measurements of many of the ancient structures at Yagul, the College's archeological site. In recording the figures and making his calculations he was startled by the fact that the measurements seemed to be multiples of some common factor. Furthermore, the multiples, in many cases, seemed to be five or ten times the factor. Further checking indicated that the factor was about 16¾ inches, which also was the arm length of a modern Zapotec Indian. This indicated to him that the arm length had been used by the *ancianos* as we would use the foot or the yard. (Although the inhabitants of the Holy Lands once used the arm length, which they called the cubit, he does not wish to imply that there was necessarily any connection.)

Although most of his time as an upper classman in college is now taken up with physics, he intends to spend part of a future vacation in Mexico, rechecking his measurements for accuracy and looking for substantiating data. Since he made his first measurements at Yagul, he has learned from Americanists that the Maya used the arm length. It is therefore reasonable to expect that others used it here.

## Paleo Indian "Tombs"

Prehistoric inhabitants of the Ohio River Valley built "tombs" for their distinguished dead.

Excavation of one of the largest of these, near New Martinsville, W. Va., is described by Frank M. Setzler, Smithsonian Institution curator of anthropology, in a bulletin issued by the Institution.

These ancient Indians, who appear to have occupied the area from about 800 B.C. to A.D. 800, are known generally as the Adena people. They evidently developed a fairly high material culture. Most notable of their remains are the

NEWS — CONTINUED ON PAGE 64

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## Book Reviews

*The Complex "TREE-OF-LIFE" Carving on Izapa Stela 5; Reanalysis and Partial Interpretation*, by M. Wells Jakeman, Brigham Young University Publications in Archaeology and Early History, Mesoamerican Series No. 4, Provo, Utah, 1958. Reviewed by Charles Gallenkamp.

The subject of this monograph is a stone monument designated as Stela 5 uncovered at the site of Izapa in southern Chiapas, Mexico. Since its discovery some years ago there have been numerous efforts to interpret the particularly unique tableau etched in low relief on its surface. In the present work Dr. Jakeman offers the most detailed and reasonable analysis thus far published, and his conclusions regarding possible analogies between the Izapa stela and similar representations found in the Old World — always a controversial though undeniably tempting area of speculation — are presented with refreshing objectivity.

The essential features of the tableau in question depict a fruit-bearing tree attended by two priests or supernatural beings in the guise of birds. A group of six human figures in various attitudes of gesture are ceremoniously arrayed at its base. Utilizing a careful comparison of stylistic elements which relate to known factors in Mesoamerican symbology, Dr. Jakeman identifies the central motif as a "Tree of Life" flanked by attending personages of high rank — a scene strongly reminiscent of the Tablet of the Cross at Palenque, and similar illustrations found in Aztec, Maya, and Mixtec codices.

Most prominent among the figures seated beneath the tree is a heavily bearded man accompanied by an attendant holding aloft a glyph-bearing standard. The hieroglyph is that of the *cipactli* or "crocodile" sometimes associated with several aged couples variously believed in ancient Mexican cosmology to have engendered mankind, invented the calendar, astrology, and medicine. The Aztecs knew them as *Cipactonal* and *Oxomoco*. Their counterparts among the Quiché Maya were *Ixpiyacoc* and *Ixmucané* who, according to the *Popol Vuh*, were the parents of the first warrior heroes of highland Guatemala. The identity of the lesser figures is somewhat more nebulous, but the author suggests they may represent four sons of the ancestral couple, one of whom is attired as a priest or ruler.

If this general interpretation is correct then the Izapa sculpture recounts a fascinating mythological vignette: the sons of the legendary ancestral couple absorbing and perhaps recording — for the ruling figure holds a stylus and tablet —

their knowledge of the munificent "Tree of Life."

In conclusion there follows a discussion of the possible significance of analogous concepts found in both the Izapa monument and certain examples of Near Eastern art, with particular emphasis upon elements such as the Tree of Life attended by hierarchical personages, similarities of headdress and costume, bearded figures, and the parallel symbolism of fish, bird, and serpent representations. For those familiar with the writings of Ekholm and Covarrubias regarding the evidence of Asiatic influence in Mesoamerica, Dr. Jakeman's paper will provide interesting conjecture in the direction of Assyria and Babylonia.

**AN ANTHROPOLOGIST AT WORK: WRITINGS OF RUTH BENEDICT**, by Margaret Mead. Boston: Houghton Mifflin Company, 1959. 583 pp., 14 illustrations. \$6.00. Reviewed by Abraham Gruber, Los Angeles City College.

This is not the usual type of material that is written by an anthropologist, but rather the biography of a noted "student of man" by a contemporary who knew her well.

Dr. Mead chose to de-emphasize her subject's chronological life history and instead present a compilation of Ruth Benedict's papers. There is considerable merit

in bringing together excerpts from Benedict's writings in one volume. But the often unrelated nature of these excerpts appears as a weak point here, for a good deal of cohesion and integration is lost in the process. Mead repeats much of the material from some of Benedict's previously published works and does not go as far as she might in her effort to "try and describe how and why it was done the way it was done" (p. xvi).

A relatively large amount of Benedict's writings deals with correspondence to Sapir, Mead, and others, as well as diary notes and poems. This material suffers by being set apart with little integration into the rest of the material, and also by the relative poverty of attempted interpretations. The author has tried valiantly but somewhat imperfectly to combine biographical and anthropological material.

In spite of such shortcomings in style, there is much in the autobiographical material of Benedict that is enlightening. Some of her poems, for instance, reflect a morbidity and loneliness of soul almost akin to those of Edgar Allen Poe. These same effects are also brought out in a number of letters and conversations with Mead and with other persons. It all seems to lead to the view of the subject as a rather somber individual who had to undergo a great inner struggle in her

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search for peace and self-fulfillment. One can surmise, therefore, that anthropology and Ruth Benedict would have come together sooner or later, for this science served as a natural outlet which expressed her drive toward trying to understand man.

The comparatively infrequent but excellent descriptions and accounts concerning Benedict do allow some probing of her unusual character and are quite satisfying. Several plates of photographs which show the subject's family and several stages in her life are poignant and revealing. Of further interest are several of Benedict's unpublished papers as well as interesting, though brief, autobiographical comments on such anthropological greats as Boaz, Sapir, Radcliffe-Brown, Lowie, Malinowski, and many others. Although the editing and style leave something to be desired, there is considerable value and stimulation in this book.

**THE PREINDUSTRIAL CITY:** Past and Present. Gideon Sjöberg. pp. 353 & xii. Free Press, Glencoe, Ill. \$6.75. Review by Dr. Carl B. Compton, Instituto Interamericano.

This reviewer is not given to unwarranted enthusiasms but this book seems so well to fill many needs that for the first time in some years he is compelled to lavish great praise for a work splendidly done.

The author discusses the culture of areas and periods unaffected by the patterns imposed by the Industrial Revolution. However, he does so with those patterns in mind and even provides something of a guide to what will happen to preindustrial cultures when, inevitably, industrialization will force changes. The whole world and all of civilized time is examined, from the contemporary non-industrial cultures to the beginnings of urban life in the far and hither East to the once proud and glittering cities of Mesoamerica.

The book should be required reading for all persons connected in any way with our diplomatic affairs in most of the world. It should also be required reading for all tourists planning to visit any but the highly industrialized regions of the world. Actually, it should be required reading for anyone who would understand the problems of the world today. It is made rather clear that most of those problems stem from the agonizing change from ages-old preindustrial life patterns to those occasioned by the industrial revolution.

The professional sociologist immersed in studies of social minutiae and special esoteric problems may object to this volume on the ground that it is too generalized. This is the greatest value, however. For a long time there has been a need for certain studies which would tie

together the admittedly valuable but piecemeal studies of these same professional sociologists and socio-historians. The present reviewer found little, if anything, in this book which he did not already know and, in fact, which he had not for many years utilized in his own classes. He is most grateful to Dr. Sjöberg for bringing this somewhat disorganized material into a compact and immediately usable form.

It is interesting that Dr. Andree F. Sjöberg, the wife of the author and an authority on oriental culture as well as an accomplished professional in the field of linguistics, wrote the two chapters on Mesoamerica.

### The Living Stone, A Motion Picture

Eskimo sculpture, its origins and meaning, set against a background of Eskimo life during spring and summer at Cape Dorset on Baffin Island in Canada's eastern Arctic, 16 mm. Color. 33 minutes.

In **THE LIVING STONE** writer-director John Feeney has drawn a gentle, evocative picture of Eskimo life, livelihood and social customs, and of the ancient beliefs in which are found the origins of Eskimo stone carving.

In the images he fashioned out of stone the Eskimo sought to influence the spirits of nature which, he believed, determined whether he should go hungry or be fed, whether fierce blizzards should blow or the sun return to bring warmth to his land.

The film brings to the screen an old legend of the Eskimos of Baffin Island, about Nuleakjuk, "mother of all life in the sea," whose image is carved by the hunter Niviaski. His dwindling seal catch is restored, bringing fortune and great rejoicing to his camp.

The hunter poised over a seal hole; the sharing, feasting and dancing that follow a good catch; a cluster of igloos in the frozen Arctic night, through whose ice domes the light from within faintly penetrates . . . those and other actuality sequences are woven into the film as Feeney tells his story from the point of view of the Eskimos themselves.

While earlier Eskimo sculpture derived from innocent fetishism, today the Eskimo carves mainly for sale to the white man. But, as always, he explains his carving by saying that he has seen a figure in the rough stone and seeks to release it. The film shows some of the more outstanding modern Eskimo stone sculptures.

This interesting film is available through The Vancouver Film Council, 5 East Broadway, Vancouver 10, B.C. (Quarterly Bulletin of the Lapidary Rock and Mineral Society of British Columbia.)

### TOMBS . . .

CONTINUED FROM PAGE 62

great mounds such as the one at Moundsville, W. Va., known as the Grave Creek Mound, and the Miamisburg Mound in Ohio, scattered over the region. All of them required considerable hand labor and apparently were built as burial places.

All contain skeletons. The bodies usually were interred extended on their backs with personal belongings and ceremonial and political paraphernalia, surrounded by log and bark structures. The ceremonial objects buried with a deceased individual presumably were regarded as contributing to his welfare in afterlife.

The mound excavated by Mr. Setzler was about 110 feet in diameter and 14 feet high. Hundreds of tons of dirt were piled up for the burial of only three adult human beings. In the mouth of one was found a large tooth, later identified as that of a mountain lion. The skeleton may have been that of an important witch doctor buried in his ceremonial mask and robes. This probably included an animal mask of which the tooth was a part. The rest has disappeared.

The most unusual object recovered was a tobacco pipe more than six inches long, skillfully carved in the shape of a duck. It apparently was part of the honored shaman's professional paraphernalia.

"Among numerous primitive people," reports Mr. Setzler, "smoking of tobacco or of some similar herb was regarded as sacred, or an important part of a ceremonial function. As we know from early European contacts with North American Indians, smoking a peace pipe attended all important political as well as religious or ceremonial functions. Possibly these effigy pipes found in the mounds of the Adena represent the origin of such a ceremony."

"When we consider the impact that tobacco had upon the countries of the world after 1492 it is understandable that probably the original users of this herb buried pipes, especially such carved pipes, as offerings to their dead." (Smithsonian Institution, Oct. 11, 1960.)

### Dating By Dendrochronology

Use of tree rings has been an important means of dating by the archeologist. To make this means more useful and more accurate, new studies of various species of trees from different parts of the country have been made by Dr. Waldo S. Glock and Miss Sharlene R. Agerter of Macalester College, St. Paul, Minn., and the late Dr. R. A. Studhalter of Texas Technological College, Lubbock, Texas. Their work was supported by grants-in-aid from the Society of Sigma Xi, the Smithsonian Institution, Texas Technological College, and the National Science Foundation.

The results of the study not only lead

to a clearer understanding of the growth habits of trees but also may throw new light on the dating problems which have confronted archeologists. Archeological dates may have to be modified slightly but not seriously altered. The study emphasized growth in branches with secondary emphasis placed on trunks. Trees tend to grow by flushes almost any time of year whenever the conditions are favorable rather than by steady annual amounts. One part of the tree may grow while another part does not. Distinct rings as indicators of annual growth probably no longer can be accepted in all regions as entirely reliable indicators of age or weather variations.

#### Findings in brief:

1. Growth neither begins nor ends consistently among all trees in a specified environment, among all members of a species, among all branches, or even over a single branch.

2. "Flushes," spurts of growth, may take place not only annually but several times in a year.

3. The amounts of xylem, or woody tissue, included in annual growth increments remain fairly consistent from year to year, but the amounts included in single growth layers may fluctuate to an astonishing degree.

4. A growth flush may result either in an entire sheath over the whole tree or in a partial sheath over any portion of the tree. The partial growth layers were found to be highly irregular in their distribution among different trees, over a single tree, or within a single branch. Thus growth activity may be either general over a tree throughout the growing season, or it may be highly localized in both time and space.

A great portion of the trees studied came from or near the campus of Texas Technological College. Others, however, came from the mountains of northern New Mexico, from the Chisos Mountains of southwestern Texas, from Yuma, Ariz., and from the vicinity of Washington, D.C. These areas varied widely in climate, especially rainfall, temperature, and elevation, but in general the same principles seemed to hold throughout.

Perhaps the greatest significance of the studies is the new light thrown on the absolute validity of "tree ring calendars" by which certain archeological sites in the Southwest have been dated. These calendars are based upon the principle that trees produce one sharp ring per year. The authors emphasize that their work is applicable to trees in extreme forest border situations. They report, "Multiple flushes within one year can and do yield multiple growth layers within an annual increment. From a forest interior, where it is thought that an annual increment seldom if ever contains multiple growth layers, to the forest edge, and

into the scattered trees beyond, the tendency toward multiplicity increases until it becomes of high order."

Even with slight errors in ring counts because of multiple growth in one year among the trees used by the Indians for their dwellings, tree-ring dates of those dwellings may have a high order of accuracy compared with other methods.

"The error in the simple counting of sharply bounded growth layers, interpreting them to be annual, is therefore rather large among trees grown under extreme forest border conditions." Within the true forest border as commonly understood, from which came some of the timbers used by the Indians, the range of error is estimated to average 5 per cent and may be considerably less. Even with a possible error in dating, no other method approaches the accuracy of tree rings.

"Strong evidence indicates that the trunk of a tree duplicates the history and vicissitudes of growth as written in the branches. Branches were studied to a great extent in the present work not only because of the obvious advantages in manipulation and measurements but also because their growth layers could be dated in absolute fashion."

A comprehensive report on dating by dendrochronology is available from the Smithsonian. (Smithsonian Institution, October 22, 1960.)

## Sea Going Anthropology

Anthropologists have often used the similarities of plant life on the different continents to "prove" that man had moved from one continent to another, taking his favorite plant food with him. Plant distribution played an important part in Thor Heyerdahl's work on the Polynesian and Pre-Inca relations, which he so adequately stated in his dissertation, *Polynesia and America; A Study in Cultural Relations* and in his two books, *Kon Tiki* and *American Indians of the Pacific*. Other anthropologists have also used plant distribution in intercontinental studies.

Now comes a theory that plant distribution could have taken place by means of ocean currents instead of, or in addition to, distribution of plants by man. Under a dateline of 2 September 1960, the Smithsonian Institution has this to say:

One often hears of the long voyages of animals, rafted on logs and other debris thousands of miles across oceans and deposited in new lands often to flourish there. Plants, too, regularly take similar trips by

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way of the ocean currents. An example is the fruit of South America, rafted all the way to the shores of Scotland.

The drift fruit is from the tropical tree *Sacoglottis amazonica*. Dr. José Cuatrecasas, research associate, Department of Botany, Smithsonian Institution, recently completed a study of this tree as well as the entire family of trees, *Humiriaceae*, of which it is a member.

*Sacoglottis amazonica* bears fruit with a woody pit about the size of a walnut but more oval shaped. The pit has special air-tight cavities that give it a buoyancy and enable it to float for years on the rivers and oceans.

Originating in the Amazonian forests, the drift fruit is carried by the Amazon and Orinoco Rivers to the Atlantic Ocean, from where it is then transported to the West Indies, the coasts of Central America, and all the way to the British Isles by the Gulf Stream. The drift fruit may have taken root in the West Indies and Central America because *Sacoglottis amaz-*

*onica* occurs on the islands of Trinidad and St. Vincent and in Costa Rica.

A similar tree, *Sacoglottis gabonensis*, grows in the tropical forests of Africa. Like *Sacoglottis amazonica*, it probably evolved from an earlier species common to the Amazonian jungle, whose fruit was rafted across the Atlantic by the counter equatorial current and took root in Africa.

Still another similar species, *Sacoglottis ovicarpa*, grows on the Pacific side of the Andes. The fruit of this tree is often found floating northward with the current in the Pacific Ocean.

Dr. Cuatrecasas finds that the family is entirely tropical, made up of about 49 species growing from Costa Rica to southern Brazil. The species in Africa is the only one found outside the New World. The trees are important constituents of the tropical rain forests, although certain ones also inhabit less rainy areas such as the savannas. Most species grow tall, but some grow as shrubs. They inhabit both the lowlands and the uplands.

Broad-leaved and evergreen, the family displays a great variety of fruit. The fruit of some species is fleshy and edible. The fruit and seeds also contain a fatty oil that in some places in the Amazon is used in the domestic economy. The oil has organoleptic properties similar to those of olive oil. The seeds of *Sacoglottis gabonensis* in Africa, for example, contain 54 percent fatty oil.

The wood is often so hard as to defy saws and chippers, but it is used locally in construction in Central and South America. In the

tropical rain forests, forestry people would not find a dense growth of any one species of *Humiriaceae* because they are thinly dispersed among many other species.

The bark and wood of some species produce a balsam that is used for medicinal purposes. Little is known about its preparation, trade, and chemical properties.

## Paleo-Plains Culture

A Plains Indian culture that had at least some affiliations with the highly advanced Pueblo complex of the Southwest flourished in the Midwest about 250 years ago. This so called Dismal River culture of western Nebraska and Kansas, eastern Colorado, and southeastern Wyoming apparently represents a period of domination of the region by tribes of Apaches, first encountered by white men in western Texas, New Mexico, and Arizona.

The culture as revealed by the archeology of village sites of the area is described by James H. Gunnerson in a bulletin recently published by the Bureau of American Ethnology of the Smithsonian Institution. Ethnologically the Apaches were a so called Athabascan people, presumably originating far to the north, who made their way southward over a period of centuries, occupied the high plains for a time, eventually gave way to tribes like the Pawnees and Chippewas, and went southward to become a scourge of the Pueblo villages.

For a time, it is indicated by the Dismal River remains, named for a small stream in north-central Nebraska, they must have lived together with the more advanced Indians who finally ousted them. Traits common to both are found in the Apache sites. During the time of their occupancy, the remains indicate, they made incursions far to the south and borrowed various elements of Pueblo culture.

Hitherto this Dismal River complex has been something of a mystery in western prehistory.

"The archaeological evidence," reports Mr. Gunnerson, "indicates that the Dismal River people possessed essentially the same hunting and skin-working tool used by other Plains groups around the year 1700 . . . Traits showing contact with the Southwest are equally specific: Pueblo trade sherds, turquoise, and drills show . . . striking similarities to those of Pecos, the only eastern pueblo from which comparative data are available. More surprising are the

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similarities between Dismal River and the Promontory culture of Utah — close enough to suggest that the Promontory culture represents Dismal River hunters who followed bison herds into the Great Basin."

Only their type of lodge, Mr. Gunnerson says, was entirely unique with this people.

It now seems apparent, he says, that the Apache groups came into the Southwest by way of the High Plains quite early in the 16th century.

(Smithsonian Institution, August 11, 1960)

## Surface Finds

THIS IS THE FIRST of a series of highly informal articles aimed at the folks who are the very backbone of archeology, the collectors who prefer to find their specimens in the field, not on some dealer's table. In particular these articles will be aimed at the collector who wants to learn all he can about the artifact he finds, and to become a competent amateur archeologist, not merely a curio collector.

Surface hunting for Indian relics is the finest of all outdoor sports, and I say "sport" advisedly, for it exercises both muscle and mind in its pursuit. Anyone who ever spent the afternoon prowling a cornfield, discovered some new muscles by evening. He saw many things that aroused his curiosity, besides the relics he found. Those finds were the only tangible things he brought back with him.

No department of human knowledge of the universe around us is foreign to archeology. They are all needed to solve the puzzles we find in our study of the men who hunted in our forests and fields, fished in our rivers and lakes, and now lie

under the soil of the land that was theirs, and is now ours. Pick up a flint knife or arrow tip from the soil, and you are receiving it from the hand of the man who made and used it. He stood where you stand and looked at the sky above him for weather signs, and he looked out across the plains or the river valley, and enjoyed the view as you are doing.

Some of the ivory tower pundits look down on the surface hunters as mere curio collectors, but surface hunting is a valuable and a valid archeological method of research, if proper records of sites and finds are kept. When it comes to keeping a record of your finds, the time to do it is right now. Then as soon as you get home with your "loot" and have it cleaned up, number it and record it. More will be said about record keeping in future articles, much more.

Science excavation by trained archeologists can give us the temporal sequence of types of artifacts and their associations, but surface hunting gives the territorial range of each type. It is only by correlating the two sets of data that we can arrive at a true picture of our prehistory.

The average site was hunted long before you ever found it. What you can still find is not a true picture of what the site contained originally. The casual finder picks up what he sees, the big ones and those made of the brighter and gaudier stones. As a rule the man who picks up any Indian relic he sees, but is not a collector, does not know of any types of artifacts except arrow points and maybe the axe or hatchet. You should know them, and it is a very good rule to pick up everything you see that shows any trace of human workmanship.

When hunting don't pick up just the perfect pieces; don't throw that broken point down again, you may find the other half sometime. Even if broken it has a story to tell if you can read it. Even pick up the chips. If may appear to be merely a chip, but it might be a scraper or a flake used as a knife. Pick them up, put them in your pocket, and check them after you get home, not in the field. Doing so in the field takes time. You can cover more ground per hour if you don't inspect each piece as you find it.

Chips are important. They show the materials used on that site, and materials can be traced to their sources. You will find more kinds of flint among the chips than among the perfect pieces. Too many of those were picked up and so any data are now lost. You will learn as you hunt, more and more, that certain types of chipped items are made of definite varieties of flint. Different cultures utilized different quarries very often. In some cases the flint variety is diagnostic of the culture.

There exist cultures that never made a

projectile point of flint, nor made a shaped tool. All their cutting and scraping was done with flakes as they were struck off from the core. So save your chips, and put them in the site box in which you store the "junk" you don't want to display. And keep that site box labeled with the name of the site and its location. Never trust to your memory. You know where you found a specimen, but you won't be around in 2061 to tell an inquirer. The specimen will be around then, though. It has lasted from a couple of hundred up to ten thousands years already and will last forever if not destroyed.

Material from each site, which quite naturally is unnumbered, *must* be kept separately. The best way to do this is to have a series of site boxes, labeled on the outside, and with a card on the inside giving the site data, name and location. Sometimes one field will show more than one concentration of material, and these concentrations are often the archeological remains of camps or villages of different cultures hundreds or thousands of years apart in time. A friend working at Stonehenge told me that he had picked Neolithic flint chips, left by its builders, sherds of Roman pottery, and caps from beer bottles out of the same shovelful of topsoil.

I have a pet site that shows four different concentrations on its ten acres. On one spot nearly everything is archaic. At another one, nearly everything is Early Woodland. Another one is of an Adena-like culture. Mingled with this are the debris and points of the Erie tribe who were the last native Indians in northern Ohio. Certainly you find strays from each on the other spots, but in laying out the assemblages the difference is easy to see.

I carry a supply of strong sacks in my car. Coffee sacks are ideal. In each sack is a card. I stop and hunt a site. When I get back to the car, I empty my pockets or carrying bag into a sack, write the name of the site and the date on the card, and fasten it shut. Then I can work over the take at my leisure that night, next week, or next year. The material does not get lost or mixed with material from other sites.

Every surface hunter should be in touch with the nearest museum that is owned by the state, or some college or university. He should cooperate with the professionals there. You don't have to act like a poor relation begging a handout when you meet a professional. You know more about some certain site or sites than he does. He can learn from you, and you can learn from him. Don't be afraid to ask the professional questions, then remember the answers. You don't have to worry about a professional's stealing your site; he has more than he can do already. If you can possibly do it, get some pro-

### Arthur George Smith

#### *A Biographical Sketch*

Arthur George Smith, editor of *Surface Finds*, is curator of archeology at the Firelands Museum in Norwalk, Ohio. Although past 70, he is still active in the field of archeology. His specialties in training of the amateur and the collector through his writing and personal assistance. Mr. Smith is Past President of the Ohio Indian Relic Collectors' Society and is now the Executive Secretary of the Archeological Society of Ohio and a Fellow of the Instituto Interamericano.

In *Surface Finds* next issue, Mr. Smith will tell how to find sites.

fessional to allow you to help him on a dig, even if it is only wheeling away the dirt. You will learn a lot, and above all you can learn the technique of scientific excavation.

## CORRECTION

**TOURIST DATA**, Oaxaca, page 43, December issue, 1960. Prof. John Pad-dock, Mexico City College, informs us that the Autobuses del Sureste, Calle Niño Perdido 19, no longer run to Oaxaca. You may now go by Autobuses de Oriente, Calle Buena Vista #9, Mex-ico, D.F. This line runs five buses per day. Fare, \$46.00 (pesos) or \$3.68 (U.S. currency).

## How to Win Foreign Friends And Influence Mexicans

As this goes to press, word is received to the effect that the Mexican newspaper, *Excelsior*, has printed a long and indignant front-page article in its Sunday edition about a Los Angeles artifact dealer. Apparently the dealer was trying to get some of his "smuggled Mexican goodies" into a fine arts exhibit in Italy, causing the cancellation of the Mexican govern-ment's participation in that exhibit. His purpose, it is said, was to get his material into a catalog of official exhibits, thereby both advertising his goods, gratis, and at the same time seemingly obtaining an official guarantee of them.

Will Americans never learn how to win friends and influence people?

Scholars believe that the present New Testament may have as many as 50,000 errors in it.

## More on the Olmecs

The following information comes to us from Dr. M. Wells Jakeman, Professor Archaeology, Department of Archaeology, Brigham Young University, Provo, Utah, in his letter of October 18, 1960:

It does now appear that there was an early widespread "Olmec" civil-ization in Southern Mexico (i.e., La Venta-Monte Albán I), which reached its climax in the first mil-lenium B.C., and extended its in-fluence into highland central Mex-ico (Tlatilco II, early Ticomán, etc.), and highland Chiapas and Guatemala. (However, most of the *stelae* at La Venta, Stela C at Tres Zapotes, and Stela 5 at Izapa seem to belong to a somewhat later period — of "Modified Olmec" art, dating from the first centuries be-fore or after the birth of Christ.)

For more about Stela 5 of Izapa, see the report on Dr. Jakeman's book on page 63.

## TOURIST DATA: SAMOA

CONTINUED FROM PAGE 57

in one form or another, Protestantism, Mor-monism, or Catholicism.

**TRANSPORTATION.** Ships from New Zealand call every month at Pago Pago, American Samoa. Freighters call from time to time. The Matson Line has regular pas-senger service to Pago Pago every three weeks from the United States. Pan American Airways provides weekly air service to and from Honolulu. There is scheduled service between American (Eastern) and Western Samoa (British). Matson Line advertises "as little as \$937.50" for a 42-day cruise.

**HOTELS.** No data available.

## Indian Calendars

The Dakota Indians of the Northwest had unique calendars, the so called *waniyetu wowapi* or "winter counts."

These were in the form of charts giving a picture of some outstanding event for each year over a series of years. Thus they were not only calendars of a sort but also dated historical records.

The term "winter" in the Dakota lan-guage is equivalent to "year." A person is spoken of as so many winters old, in-stead of so many years. Many of the pictures are of events which actually took place in summer, spring, or fall.

Report of a study by Dr. James H. Howard of nine such calendars, originally drawn on hides and later on strips of cloth, which have been preserved in vari-

ous collections but not heretofore pub-lished, has just been published by the Bureau of American Ethnology of the Smithsonian Institution.

In some ways the calendars were quite reliable. Moreover, broadly interpreted, they reveal much of important features of Dakota culture during the periods cov-ered. Usually the same year in the dif-ferent calendars is designated by the same picture.

Historically, however, they hardly can be relied upon. The "historians" were quite prejudiced in favor of their own viewpoints toward events.

"It was found," according to Dr. Howard, "that the different counts, al-though presenting nearly identical picto-graphs for a given year, and obviously

CONTINUED ON PAGE 69

## Credits Omitted

December Issue

ROSS EARTHWORKS. All photo-graphs, courtesy of the National Museum of Canada. The drawing was by the author, Thomas E. Lee. COSTUMES OF THE WARRIORS OF TENOCHTITLÁN. Illustrations were by Abel Mendoza of the Instituto Nacional de Antropología e His-toria, Mexico, D.F.

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## Dear Editor

Dear Editor:

I had some objections regarding the Ray Brown article. One of these was the artifacts themselves which apparently do not have any recording numbers. Of course they may be on the reverse side. I feel that it is important that they be shown, even at the loss of a pretty picture. As shown, it gives the idea that this fine collection is not recorded as to area site, etc.

Even worse was the picture on page 24 of the "Agate Basin" point for which \$500 was offered. The belief that such points are this valuable makes the collector think of his collection in terms of wealth rather than its importance to science. We are currently digging an Agate Basin site and the landowners spotted this. They now think I am making a fortune out of their site area. Actually I have a half a dozen students who could reproduce this point in as good condition in half an hour. Such pictures only encourage fake points and play up the money value of archeology which is not its real purpose.

George A. Agogino  
(Department of Economics, Sociology, and Anthropology, The University of Wyoming, University Station, Box 3254, Laramie, Wyo.)

*Dr. Agogino is entirely right. The reason for this article, however, can be found in the editorial of the same issue and in the article "Some Don't's for the Hobbyist" (par. 2) on page 35. It is the hobbyists and collectors who form one of the largest groups that we hope to interest. Through SCIENCE OF MAN, we hope to show them how to catalogue their artifacts, how to take notes, what not to collect. We hope to interest them in their collections, not for collecting's sake, but rather because the items they collect tell us so much about the people who made them. (Anthropology, including archeology, is a study of Man, not his artifacts. The collection and study of his artifacts are only a means to an end.) Material is now being prepared for publication in future issues on cataloguing, field techniques including recording and photography, and other phases to help the beginner. Ed.*

Dear Editor:

We have not been bothered so much by vandals as we are by the new federal and state projects, such as roads, pipe lines, sub-divisions, etc.

We have a federal road project nearby and I understand the federal government will reimburse the contractor for delay for archaeological work. As it is ad-

ministered by the state, our state Attorney General says that this would come under the State Conservation Department instead of the Highway Department. The Conservation Department says it does not have the trained personnel to watch all the projects, so nothing is done.

Maybe I am wrong, but the little guy is welcome when it comes to doing the physical work, but if any glory comes along it is the trained men who get it. I recognize that on any project there should be a trained archeologist who oversees it and who can "read the signs."

On this road project, there were some square post holes found indicating a French occupation, but before anyone knew about it they were ruined by heavy road equipment and lost for all times. Because of the antiquity act and the lack of interest these signs of a former occupation are gone forever.

Frank W. Mortimore  
RFD #1  
Morrice, Mich.

*The feelings of the editor are expressed in the editorial in this issue and in the last one. While not specifically mentioned in the editorial, state laws should prescribe a definite relationship between the state department of public works or highway department and the archeological finds. It should also provide for sufficient trained personnel to handle the situation. It is up to you, the voter, to see that you get what you want. Ed.*

## CALENDARS

CONTINUED FROM PAGE 68

describing the same incident, ascribed entirely different identities to the participants. One account might mention that a Dakota killed a Crow, another that a Crow killed a Dakota, and still another that a Dakota was killed by an Arikara." The tribal identification of the person and his assailant was left to whoever was keeping the winter count at the time. "Interesting changes were noted in the insignia used to identify persons of different tribal groups in the various counts, and in earlier and later years of the same count."

The locations mentioned in the various counts, however, seemed to agree to an exceptional degree, regardless of the chronicler. (Smithsonian Institution, August 4, 1960.)

Dates of Christmas or Christmaslike celebrations differ as much as one full month in Europe and America. Some celebrate as early as December 6, St. Nicholas Day, others celebrate before and after the supposed date of Christ's birth, December 25, while others celebrate and give gifts on January 6, *el día de los Magos* (Three Kings Day or Epiphany).

## Documentation Omitted

Following the practice of all scientific publications, anthropological news reports will henceforth be documented so that readers may check the original source. This was not done in the first issue of SCIENCE OF MAN, we regret to say. The following news items in that issue were taken from the Smithsonian Institution news releases as indicated:

*Indian City States*, April 1, 1960.  
*Greek Shrine Unearthed*, May 29, 1960.

Among the so called Dead Sea scrolls, copies or parts of every book of our Bible have been found except Esther. The lack of Esther seems to indicate one of two things, (a) that the book did not exist in the time of the Dead Sea Covenanters, or (b) it was not recognized as a canonical book by them.

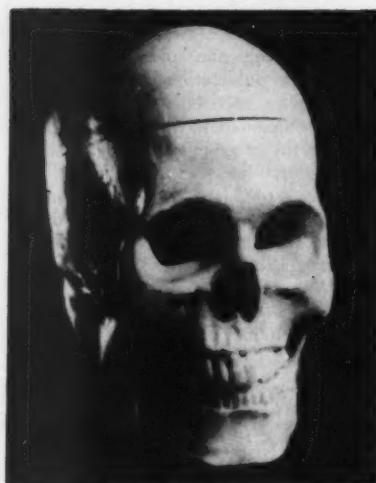
## Otto Done

*A Biographical Sketch*

Otto Done, the author of "Bonampak, a Mayan Mystery," was raised in the Mormon colonies in the State of Chihuahua in northern Mexico. He learned English and Spanish simultaneously. Both were his native languages. Consequently he is as much at home among the Mexican people as he is among those north of the border. His fluency in Spanish and his knowledge of the people and their customs have enabled him to go many places where a *norteamericano* would not ordinarily be welcomed. It was his Mexican background that enabled him to make what, in his story, seemed to be an easy contact with the Lacandonese.

Otto is a superb photographer and has been a representative of Eastman Kodak Company a number of years. Because of his fluency in Spanish and his acquaintance with Mexican people and customs, he has also been a representative for a genealogical society, microfilming old records in Mexico. For the last few years, Otto has been a professional writer and photographer. In addition he conducts tours for groups, primarily for those interested in archeology and in trailer travel, to various sites in Mexico. His profusely illustrated articles have appeared in many national magazines.

## Life-Size Skull for Study



Recommended for doctors, dentists, scientists, nurses, teachers and students, a new, life-size, plastic human skull is now available from Edmund Scientific Company. Developed after 3 years of research by a prominent physician, the skull is anatomically correct and made of natural bone-color, bone-hard, unbreakable plastic. Skull parts take apart or snap together easily. The skull cap is removable for demonstration or examination of skull cavity, nasal passages, etc. A spring-action lower jaw is complete with teeth. It comes complete with display stand, instruction and anatomy chart and is priced at \$4.95 postpaid with a money-back guarantee. It can be ordered from Edmund Scientific Company, Barrington 34, New Jersey.

Although Plato told of Atlantis and its violent extermination by earthquakes and floods, no evidence of it has been found after 4000 years. Many scholars now believe that Atlantis never really existed at all.

## Sorry, No Heads

Undoubtedly some of our readers have heard reports of large stone heads having been discovered in Colombia. These heads were supposed to have been of the same type as those of Easter Island which have been so well publicized in recent years. Naturally some took an immediate interest and went so far as to speculate on possible cultural connections between Easter Island and the mainland.

Robert D. Cross, Cultural Affairs Officer of the American Embassy, Bogota, Colombia, in a letter dated October 21, 1960, has this to say:

"Dr. Luis Duque Gomez, Director of the Colombian Institute of Anthropology, informs me that the reports of recent discoveries in Colombia of large stone heads are false. No such discoveries have been made here."

This is one the many examples that go to prove that as scientists and investigators, we must never believe any report without checking its veracity. SCIENCE OF MAN will do its part in verifying all such reports and publicizing them, whether true or false. Ed.

## Shrines

There are hundreds of shrines in Mexico, and many beautiful cathedrals, but the spot closest to the heart of the Mexican people is the little *Basilica of Our Lady of Guadalupe*, about three miles north of the city center of Mexico, D. F. The shrine commemorates the spot where a peasant Indian boy, Juan Diego, was said to have seen a vision of the Virgin in the year 1531. The figure of the Virgin which was later found imprinted on his cloak is now enshrined in the basilica. It is still as clear as it was in that day. The workmanship of the picture has never been duplicated to this day, and remains a mystery to all.

No known "original" manuscript of any part of the Bible exists today.

## SSMAPP

Information has recently been received that an organization known as *The Society for the Suppression of Missionary Activity among Primitive People* has been founded in California. While the members of the society are by no means atheists, irreligious, or opposed to missionary activity among our own people, they feel that attempts at Christianization among primitive cultures have done more harm than good. As a substitute for religious missionary activities, the Society plans to send out its own teams of physicians, nurses, and anthropologists, as soon as finances permit. These teams, it is hoped, will undo the damage done by White Man, rather than proselyte the "natives" as has been the custom in the past.

## Comparison of Pyramids

Many people try to compare the pyramids of the Old World with those of the New, yet except for their almost pyramidal shape they have little in common. Old World pyramids were built of very large pieces of cut stone which the builders hauled for miles. These were very carefully put together. The American pyramids, on the other hand, were just heaps of rubble — dirt, rocks, and potsherds pushed together — and faced with some other material, rocks, adobe bricks, or lime mortar. The Egyptian pyramids were built primarily as burial places for their kings and dignitaries, while the American ones were merely temple mounds — mounds or bases made to raise the temples as high as possible towards the gods and the skies. True there were burials in many of the American mounds, but the burials were an afterthought, not a purpose.

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### A Problem for You

Our readers are urged to submit manuscripts for possible publication on the training of amateurs in the various points mentioned in this editorial.

CONTINUED FROM PAGE 38

not be sent to museums. It definitely should. The material is yours, the citizen's, and should be where you can see it. But what good does it do to see it, if it hasn't been studied first so you may know its real significance? By collecting for museums exclusively, the taxpayer gets only half his money's worth.

What can we do about our laws? There are two steps that must be taken. You as a citizen and owner of the property must take these steps. No one else will do it for you.

First, you must see that antiquities are adequately protected by law. Write your state and federal legislators and tell them what you want. Then keep after it until you get what you want.

Second, take necessary measures to protect your property until adequate legislation can be enacted.

To do this, we must set about to train our people through archeology clubs, gems and minerals clubs, Boy Scouts, Explorer units and, of course, through our regular educational institutions and museums. People must be trained how to treat the ruins and artifacts, how to dig, how to preserve and how to report the findings.

As individuals or club members you must set up rules for yourselves or your members containing the same five points you have asked your legislators to act upon. Train yourself and your members to respect these rules. Preach the gospel of preservation to everyone you meet. Admonish the vandal. Stop collecting for collecting's sake only, unless what you find is on the surface and not related to anything else — a "surface find." In this way, and only in this way, can we preserve our heritage of the past.

Joseph E. (Gene) Vincent  
Editor

### Clearing House for Anthropology Publications

Approximately one hundred journals, news letters, bulletins, etc., covering all fields of anthropology are now published in the United States, Canada, and Mexico. Most of them are published in the United States. Many are local or regional publications, dealing with a particular locality varying in size from a small community to an entire region of several states. They cover all fields in-

cluding general anthropology, archeology, history and prehistory, ethnology, linguistics, etc. In addition to these local and popular publications there are the technical journals in the many sub-fields of anthropology. Often one wants information on a particular area or a particular field and has trouble finding it. Likewise one often reads an article and then months later wishes to find it again and can't do it. Then, too, there are so many published that it is impossible for anyone, even the professional anthropologist, to read and digest all of them.

This magazine will serve as a clearing house for all such material and will keep a card file that will be available to anthropologists of all categories. If all the societies, clubs, museums, college anthropology departments, etc., that publish periodicals, bulletins or reports will cooperate by sending copies of all their publications such a card file will be a success. If the project is successful, SCIENCE OF MAN may undertake an index volume or perhaps an abstracting service. We must first have the cooperation of all publishers, however, in the card index program.

Send copies of your publications to:

Science of Man  
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Mentone, California

### Shells and the Anthropologist

Since shells play such an important part in the lives of primitive people, the study of shells is of utmost importance to anthropologists. Paleontologically, fossil shells can be used by archeologists and paleoanthropologists to date Early Man. Shell middens are used by the cultural anthropologists in their study of culture traits. Shell beads and shells in graves are used to indicate trade relationships. Shells indeed form an important tool of the anthropologist.

While not intended primarily for anthropologists, the new bi-monthly publication, *The shellletter of SHELLS AND THEIR NEIGHBORS*, P.O. Box 947, Redlands, Calif., should be of value to anthropologists. For example, the shells of the Grand Cayman, mentioned in an article entitled "Jamaica's Little Neighbor," by Al and Ann Becker, were used as trade items by the early Antilleans, Chibchas, and Caribs, and have been found far inland in Mexico.

In the book section, the anthropologist will find books of value to him listed.

The material contained in the article, "How to Organize a Junior Shell Club,"

by Marianna Paulson, is equally useful in organizing a junior anthropology or archeology club.

Other articles in the first issue include "Ancestors of the Lamp Shells," by Ruth A. Kirkby, well known paleobotanist, "Shell Identification," and "Fossils in Minnesota-Wisconsin."

### The Taurodont

According to William Howells, professor of anthropology at the University of Wisconsin, one of the peculiarities of the teeth of the Heidelberg man is that the innermost part of the molar, the pulp cavity, "is deep and extends down into the roots, which are fused into a sort of stump rather than being long and separate. This is a condition found neither in apes nor in modern man, and Keith has named it 'taurodont' and given it considerable importance, though others are convinced it is a singularity." This characteristic does not appear in any of the other early men or pre-men except the Neanderthaloids, and it is the characteristic more than any other that connects the Heidelberg man with the Neanderthal men.

### Virgin Births Possible

As early as 1951, scientists proved that virgin birth was possible in the higher animals. At that time virgin rabbits were caused to produce young by applying ice to the abdominal regions. Other rabbits were produced whose fathers were salt. Virgin births have since been caused by other means.

It will be interesting to note that the combined circulation of *Readers Digest* and SCIENCE OF MAN total 12,687,000.

### Cover Photo

Dr. Lowell D. Holmes, author of the article on the Samoan kava ceremony, is also the photographer who captured this fine picture of the Polynesian youth and his shell horn. Both conch and triton shells are widely used throughout the Polynesian islands as a means of calling or signalling. In this case he is calling the chiefs and the aumaga to the ceremonial house for the kava ritual.

Besides use as horns, shells of many varieties play an important part in the lives of the Polynesians as well as in the lives of other South Sea peoples.



## El Castillo

In the tropical peninsula of Yucatán, almost a thousand miles due east of the Mexican capital, lie the ruins of the ancient Maya known as Chichén Itzá. Here in Yucatán, the Maya culture reached its glory in its New Empire around A.D. 435-1204. This superb photograph by Otto Done, traveller, explorer, and photographer de luxe, shows an old pyramid topped by its temple, now known as *El Castillo*, the castle. In the left foreground is seen another Maya antiquity, the *chac-mool*, a semireclining figure of a man bearing what seems to resemble an incense burner on his abdomen.

In this issue Otto Done tells of another of his experiences in the Maya area, this time among the Lacandón Maya and at the ancient site of Bonampak, almost at the other boundary of the Maya area, five hundred miles south.

